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THE STUDENT'S HANDBOOK

OF GYNÆCOLOGY

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BY

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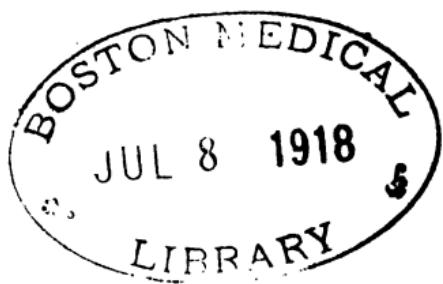
PREFACE

It has been represented to me that there may be many medical students who would like to use my book on "Diseases of Women," but are deterred by its size and its price. It has been thought that such students might value a condensed edition of the work at a third of the cost. Therefore I have prepared this "Student's Handbook of Gynæcology" from the larger work by omitting explanatory, argumentative and speculative matter, references to rare cases, and descriptions of operations not commonly performed. I hope that the gain in conciseness may not have been purchased at the expense of interest and clearness.

G. E. H.

April, 1908.

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PART I.—GENERAL

CHAPTER I

INTRODUCTORY

Major and minor gynæcology.—Gynæcology, or the knowledge of the diseases peculiar to women, may be broadly divided into two parts. Major gynæcology is the treatment, by operation, of grave diseases which so endanger life or health that they *must* be treated. Knowledge of anatomy, perfect asepsis and antisepsis, and manipulative skill, are the essentials for success. Minor gynæcology means the treatment of slight ailments which cause discomfort but do not threaten life or seriously impair health ; and it requires knowledge of medicine and sound judgment.

Peculiarities of female diseases. — The diseases peculiar to women differ in some points from disease in the other sex, and in other parts of the body. First, women are more sensitive than men. Secondly, the reproductive organs play a larger part in the life of women than they do in the life of men. The greatest happiness for a healthy woman is to be a wife and mother. With these functions are bound up her highest emotions. Anything that interferes with these functions is important, whether

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it affects her health or not. Thirdly, the reproductive function—pregnancy, labour, lactation, and the care of young children—is a great strain on the nervous energy of a woman. Sterile marriage often means a disappointed and unhappy life, which is unhealthy. Fourthly, there are certain diseases to which most women know that they are specially liable—viz., cancer and tumours ; and symptoms that they do not understand often make them think that one of these diseases is present or coming. When a woman with a weak and sensitive nervous system undergoes strain from anxiety, fear, or disturbed rest, she soon passes into a state of neurasthenia. Hysteria is much more common in women than in men. Neurasthenia or hysteria may produce local symptoms or call attention to local conditions which the patient or her doctor may wrongly imagine to be disease. In the past the medical profession has often incurred discredit because some ill-informed doctors have locally treated conditions which were not disease, in women whose symptoms were really due to hysteria or neurasthenia, and who therefore were not benefited by the local meddling.

Advantage of taking patient from home.—A woman's work is in her home. If she is suffering from neurasthenia her staying at home often means that she goes on living under the conditions that produced neurasthenia. To give her rest it is often *necessary* to take her from her home. Unnecessary local treatment has often seemed very successful, because to undergo it the patient was induced to leave her home. An hysterical patient can hardly ever be successfully treated at home.

The common difficulty in minor gynæcology. — The most frequent problem in minor gynæcology is to distinguish between symptoms caused by neurasthenia or hysteria, and symptoms

due to local disease, which is producing or helping to produce neurasthenia or hysteria. Therefore I devote a chapter of this book to neurasthenia, and another to hysteria.

Pelvic disease and remote symptoms.— It used to be said, and perhaps still is, that disease of some pelvic organ may cause some remote symptom, such as headache, or paraplegia, without any local symptoms. This is false. The only seeming justification for it is that women, from modesty, sometimes mention first some symptom not connected with the generative organs, and expect details concerning those organs to be elicited by questions.

Plan of this book.—Women do not come to a doctor labelled with the name of the organ that is diseased. They complain of symptoms. Therefore, I have thought it best to take the common symptoms and describe under each the principal diseases which cause it.

Subjects not described. — This work is not a treatise on *anatomy*. Nevertheless, an exact knowledge of the anatomy of the female generative organs is essential for the successful practice of major gynæcology. It must be learned in the dissecting-room with the help of an anatomical text-book. Nor do I offer instruction in *anæsthetics*. The best person to give the anæsthetic for an operation is one who is in the habit of frequently giving anæsthetics, and he should choose what anæsthetic he will use. Lastly, I do not treat of the great system of precautions to ensure *asepsis* and *antisepsis*, upon which all the success of modern surgery rests. This subject is of such vital importance that it cannot be compressed into an incidental chapter. There are excellent books on antiseptics, and the student should get and master one of these.

The "protean" reflex symptoms.—At one time, and possibly in some places still, a great variety of symptoms were described as "reflex" effects of small changes in the pelvic organs. These were often called "protean." Two facts about these must be thought over. First, these so-called "protean" and "reflex" symptoms were only described as accompanying very small changes in the pelvic organs, such as anteflexion, tears or scars on the perineum, erosions or lacerations of the cervix. Uterine fibroids, ovarian cysts, uterine cancer, procidentia were not found to cause the "reflex" "protean" symptoms. Secondly, the "protean" symptoms were much the same whatever the trivial change which was supposed to cause them. The explanation of these two remarkable facts is that the "protean" symptoms are not due to the trivial local change, but to neurasthenia or hysteria. Cancer, tumours, etc., occur in the healthy as well as in the neurasthenic; but a woman who has nothing more the matter with her than a scar on the perineum or a tear in the cervix will not go to a doctor or allow herself to be examined unless she is neurasthenic or hysterical.

What is neurasthenia?—It is a change in the nervous centres marked by two things: increased irritability, and diminished resistance to painful impressions. It occurs in both sexes and at all

ages. In women it is most common during the
years of sexual activity.

The causes of neurasthenia. — Neuras-
thenia is more easily produced when nervous
weakness is inherited. A weak nervous system can
be made strong by wise training, and a strong one
can be broken down by wrong training. The common
causes of neurasthenia in women are the following :—

Want of sleep, from excessive vomiting or
pain during pregnancy, or from disturbance
by an ailing child.

Impaired nutrition from excessive vomiting
or over-lactation.

Long-continued pain from local disease.

Prevention of pregnancy in such a way as to
provoke, without gratifying, sexual feeling.

Over-pressure by governesses or in schools ;
that is, training by people who think education
consists in learning by rote.

Want of occupation, solitude, and unhappi-
ness : the frequent result of sterile marriage.

Mental or physical shock, as from surgical
operations.

Symptoms of neurasthenia. — Lowness of
spirits : the patient cries from slight causes.
Irritability : she is easily startled, cannot bear a
noise. She lacks energy, is apathetic, and is easily
tired ; she cannot concentrate attention, and her
memory is bad ; she has not energy enough to sym-
pathise with other people, and therefore becomes
egotistic. She experiences groundless terrors, and
has morbid impulses, which seldom lead to acts ;
she has no delusions or hallucinations. The greatest
trouble is sleeplessness : the patient lies restless, not
kept awake by pain ; and if she sleeps she has bad
dreams. Sleeplessness leads to an uncomfortable

feeling, not a pain, on the top of the head. The muscles become weak : there is asthenopia. The patient suffers from morbid sensations and irritability in the limbs : pins and needles, cramps, fidgets, tremor. She becomes subject to backache and to neuralgias. She notices disturbances of the circulation : flushes, sensations of heat, præcordial pain, coldness of the extremities. There is "nervous dyspepsia" : loss of appetite, flatulence, nausea, easily-produced vomiting. Sometimes there is a deposit of phosphates in the urine : a phenomenon the import of which is little understood. The patient becomes liable to the so-called "hysterical" fits. I say "so-called," because these fits are more commonly caused by neurasthenia than by hysteria.

There are some patients who complain of symptoms such as neurasthenia produces, but no cause for neurasthenia can be discovered ; they sleep well, and are well nourished. The cure of such patients is very difficult.

Diagnosis.—1. Neurasthenia has to be distinguished from gross disease of brain or spinal cord. There is neither paralysis, nor local muscular wasting, nor is there optic neuritis nor atrophy, and the tendon reflexes are not diminished. 2. It is important to judge how far neurasthenia depends upon long-continued local pain, and how far upon one or more of the general causes that have been mentioned. The effect of local disease in causing neurasthenia depends on the severity and duration of the suffering and anxiety it causes. There is no such thing as neurasthenia caused by a disease of which the patient is unaware.

Prognosis.—Neurasthenia does not endanger life. The danger is lest the patient should drift into insanity. If proper treatment is used, success depends upon the age of the patient and the length

of time the neurasthenic condition has been present. The older the patient, and the longer the condition has been what it is, the slower and more uncertain will be recovery.

Treatment.—There is no specific. The treatment is first, if possible, to remove the cause. If there is a condition present producing persistent local pain, it must be removed, if possible. The causes of local pain will be spoken of in subsequent chapters. If the patient is suffering from anxiety and unhappiness—that is, from mental pain, try and find out the cause, and remove it if possible. Tell her, if you can truthfully do so, very emphatically that she has no cancer, and will not become insane. Try to alter anything in her mode of life that is injurious.

Give sleep.—This is of the first importance. Lessen reflex irritability by giving sodium bromide gr. xv. three times a day. In young patients who have only recently become neurasthenic this will in a week, or at most a fortnight, produce sound sleep and marked improvement. In old patients or very chronic cases it may fail. Do not continue it for longer than a fortnight, for it will then depress the patient and bring out spots. If it fail, you must use hypnotics. The only hypnotic that we know can be taken for years without shortening life is alcohol. Tell the patient to go to bed early ; to have as full a meal as she can take shortly before retiring, and with it a glass or two of port, sherry, or spirit and water. Let her be warmly covered and in a quiet room. Objection may be made to alcohol. In that case the least injurious hypnotics are trional gr. xv., veronal gr. v.-x., or bromural gr. x. The action of these drugs appears to be cumulative : that is, a good night with the drug will often be followed by a good night without it. I know not what harm

they do, but they have not been long in use. Good sleep is indispensable in the treatment of neurasthenia.

Feeding.—Nutrition must be kept up by full feeding. The food must be such as the patient can digest, and also such as will tempt her appetite. Those in charge of the patient should be instructed to consult her wishes as to the kind of food, but to be inflexible as to quantity. In most cases orders to this effect are enough. In a few the patient cannot, while at home, be made to eat enough, and consequently wastes.

Weir Mitchell treatment.—In these few cases the plan of treatment systematised by Dr. Weir Mitchell is best. The patient is taken from home, not allowed to communicate with her friends, and is kept in bed, under the direction of a strong-willed nurse, who makes her take food. The beneficial effects of exercise are given by massage and galvanism. A six or eight weeks' course of this treatment is worth carrying out only in patients who will not eat. It is not successful in melancholia, nor in patients whose neurasthenia is due to local disease. If by this treatment the patient has been made fat, and then she goes back to the conditions which produced the neurasthenia, she will relapse.

Massage and galvanism. — When a patient is long inactive the muscles become weak and the circulation feeble. This can be counteracted by shampooing the limbs, and making the muscles contract by galvanism. These things are best done by a skilled masseuse ; and her influence, together with the treatment, will divert the patient's mind and increase her hope of recovery. They are therefore good in neurasthenia. But they are less important than the removal of the cause; and rest,

sleep, and food. They should not, therefore, be pressed upon a patient whose means are so limited that the employment of a masseuse involves a sacrifice.

Outdoor exercise.—As soon as you have enabled the patient to sleep and eat, order as much outdoor exercise as she can take without being tired. A patient who can neither sleep nor eat is not benefited by exertion. The function of exercise is therefore rather to prevent relapse when a certain degree of improvement has taken place, than as a curative agent in bad cases.

Drugs.—The chief use of drugs in neurasthenia is to make the patient sleep and eat. Quinine and nux vomica in solution will improve appetite. If the patient is anæmic she should have iron. Syrup of the hypophosphites is thought by many to be a nerve tonic, and if the patient is thin may advantageously be given, combined with malt extract. There is a class of patients in whom irritability is more conspicuous than weakness; and these are benefited by arsenic. There are certain drugs commonly known as nervine stimulants, which make a patient who is low-spirited feel for a time a little better. They are best given combined with ammonia. Tea and coffee tend to keep people awake; therefore their use late in the evening should be forbidden to neurasthenics.

Change of air and scene.—The best of all, tonics is change of air and scene, involving, as it usually does, a respite from the work of managing a household. But first make the patient sleep and eat; then order change. Choose a place where she can be much in the open air. She will probably rest more if she goes away alone; but as to this you must consider her wishes.

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CHAPTER III

HYSTERIA

Nature and name.—Hysteria is a disease to which women are more subject than men. It is associated with mental degeneration. Its name implies that it depends upon the uterus; and an early theory about it was that it depended upon ungratified sexual desire. It depends upon neither uterus nor ovaries, for it occurs in men. It has nothing to do with sexual desire, gratified or ungratified; for in some hysterics the vagina is anæsthetic. The tendency to hysteria often lies latent until the patient becomes reduced in health, when it appears. This is why it sometimes seems to be induced by disease of the generative organs.

The diagnosis of hysteria. — This is made by the physical signs. Some of these are easily perceived; some require prolonged examination by a skilled person with special apparatus. I mention the easiest first, then the more difficult. They are (a) loss of pharyngeal reflex, and, less commonly, loss of conjunctival and corneal reflexes. (b) Hystero-genetic zones, or hyperalgesic spots. Among these points are the so-called ovarian region, about two inches internally to the anterior superior iliac spine; directly below the breasts; internally to the sterno-mastoids in the neck; in the temples; and in the supraorbital regions. Pressure over these points causes a " sickening sensation," constriction of the throat, and palpitation of the heart. (c) Loss

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of sensation over parts of a limb, or even one-half the body ; all forms of sensation, to touch, to heat, to cold, to pain, to the faradic current, are lost co-terminously. (*d*) Limitation of the field of vision ; this has to be determined with a perimeter.

The hysterical fit.—These seizures—a feeling of a lump in the throat, followed by laughing, crying, a quick pulse, no loss of consciousness, and then the passage of a large quantity of urine of low specific gravity—are a result of neurasthenia. Only a minority of hysterical subjects have them.

Nervous mimicries. — Hysteria is often associated with malingering. This word in its common use conveys the idea of shamming from some base motive. When a hysteric, without obvious motive, mimics disease, it is called neuro-mimesis, or nervous mimicry. I cannot here describe every possible mimicry of disease. I comment only on those that may trouble the gynæcologist.

Retention of urine. — This is the commonest. A healthy young woman, generally un-married, finds that she cannot pass water. There is no local disease preventing her from doing so. Draw off the urine by catheter once, to make sure that there is no local disease. If the patient wants the catheter again, let a nurse use it, or teach a female relative to do so. Give the patient an aperient. If she retains her urine long enough to put her in pain, she will be unable to resist relieving the bladder when the aperient acts.

Hysterical pain.—Hysterical joint pain and hysterical spinal pain have long been known to surgeons. Hysterical pelvic pain may also occur. This has been overlooked by many writers on gynæcology, because these authors thought that they found the explanation of such pain in some healthy condition which they imagined to be disease, such as ante-

flexion, a glairy discharge from the cervix, or so-called "cirrhosis of the ovary."

Hysterical pain differs from pain due to local disease in the fact that there are no local signs of disease. It differs from neurasthenic or neuralgic pain in this : that the distribution of the pain is in accordance with mental conceptions, and not according to the distribution of peripheral nerves. An hysteric will, for instance, have pain over the whole abdomen ; the neurasthenic has pain and tenderness only over the area supplied with sensory nerves from a particular part of the spinal cord. Hysterical pelvic pain is not common, because modesty generally prevents young women from directing attention to their sexual organs. When a hysteric connects pain with her reproductive organs it will generally be found that someone has suggested to her that disease in the pelvis is present.

Treatment. — Hysteria is the outcome of heredity plus the surroundings. The influences which in a predisposed patient will produce hysterical symptoms, are repeated suggestions of disease, either from a medical man or from friends, with want of control. If the patient remains among such influences, the disease will be kept up by constant suggestion. For successful treatment, the patient must be removed from suggestions of disease and put under control. Long-continued, tactful suggestion must be used to make her think herself well. If the patient has fixed in her mind the idea that some local disease is present, some harmless local treatment may be used to help the suggestion that she is cured ; but the use of such treatment is a confession of weakness. Make her believe that she is cured, and she is cured. The cure will be permanent if she is kept away from influences which suggest disease.

CHAPTER IV

HEADACHES

So-called uterine headache. — Much has been written about "uterine headaches." I know no such thing as a headache produced by uterine disease.

Headache often goes with disease in the pelvis, because both are common in women. It may be useful to mention the common forms of headache in women.

Migrainous headache.—The common headache is migraine, popularly known as "sick headache" or "bilious attack." There are all degrees, from slight frontal headache to severe headache with vomiting, visual phenomena, numbness and tingling in the limbs, difficulty in speech, and confusion of mind. These headaches are inherited in about half the cases. They recur periodically. They generally get worse at about the menopause, and when that is over, cease to trouble the patient.

Uric acid headache.—Dr. Haig[*] has shown that many recurrent headaches can be cured by remedies which help the elimination of uric acid— the best being calomel, in repeated half-grain doses, and salicylate of sodium, gr. xv. for a dose ; and can be prevented by eliminating from the diet meat, eggs, fish, tea, coffee, and cocoa ; the patient living upon bread, milk, rice, vegetable products, cheese, and fruit. These statements are true of some cases.

[*] "Uric Acid in the Causation of Disease.".

The diagnosis of migraine is not difficult. The history, that the patient has for years been subject to similar headaches, and that no other cerebral symptoms have developed, makes it clear.

Relation between migraine and disease of the pelvic organs.—There are four common causes apt to provoke attacks of migraine : (*a*) depressing emotions, such as anxiety, fright, fear, etc. ; (*b*) over-fatigue ; (*c*) indigestion ; (*d*) menstruation. Chronic disease of the pelvic organs may also make migraine more troublesome. But this is not a reason for calling migraine a uterine headache.

The vertical headache of neurasthenia. —This headache is distinguished by its situation ; its character, not a pain, but rather a disagreeable sensation, variously described ; it is cured by giving the patient sound sleep. I have spoken of this in the chapter on neurasthenia.

The headache of cerebral tumour. — Headache may be the first symptom of cerebral tumour. Its nature will be indicated by the association with it of vomiting, optic neuritis, and local paralysis.

The headache of renal disease.—Headache in a pregnant woman may be the first and chief symptom of renal disease. When consulted about a headache which is severe, persistent, and of recent date, remember to examine the urine and to use the ophthalmoscope.

Anæmic headaches.—Anæmia makes sufferers from megrim have more frequent and severer attacks. Anæmia is often associated with insomnia and the vertical sensation characteristic of neurasthenia. Anæmia makes patients liable to headache of a neuralgic kind : a sharp pain, sometimes described as a feeling as if a nail were being driven into the skull. This has long been known as the *clavus*

hysterious, an expression used by the great Syden-
ham: It has nothing to do with hysteria. It is
met with in those who are hysterical and anæmic
because they are anæmic, not because they are
hysterical.

Continuous headache.—This is a dull pain,
felt usually over the whole head. The patient has
it all day and every day, though it varies a little in
severity. The head is not tender : there is no vomit-
ing, nor any ocular symptoms ; it is not affected by
aperients. It is not migraine, for the patient may
have attacks of migraine superadded to this per-
sistent headache. It occurs in men as well as in
women, mostly in young adults. It is not due to
disease of the pelvic organs. Most such cases can
be cured by cannabis indica, beginning with half a
grain of the extract three times a day, gradually in-
creasing the dose, if necessary, up to two grains, and
persevering with the drug for months.

Syphilitic headache.—Syphilis may cause
headache in three ways : (a) accompanying the
febrile secondary stage ; (b) in the tertiary stage by
affecting the brain ; or (c) the periosteum and bone.
The treatment of these headaches is, of course, mer-
cury and potassium iodide.

Rheumatic headache.—Pain in the head
may be muscular rheumatism affecting the occipito-
frontalis muscle and fascia. This pain is produced
when the scalp is moved. The best drug for it is
guaiacum.

Toxic headaches.—These headaches result
from the entrance into the body of something
which causes headache. The poison may be a drug
—quinine, iron, or opium. It may be food not
properly digested. It may be alcohol, in excess;
or bad spirits. It may be gaseous —the exhalations
from badly ventilated rooms, or from drains. With

these headaches the patient commonly knows the cause. Such headaches are not chronic.

Febrile headache.—The head aches in the initial stage of many febrile diseases. Therefore, when a patient unaccustomed to headache complains of it, take her temperature.

Congestive headache. — Passive congestion of the brain causes headache. It may be produced by violent effort of any kind which fixes the chest. It is present in heart or lung disease obstructing the circulation.

Referred headaches.—Pain in the head is often a "referred pain," dependent upon disease elsewhere, and accompanied with cutaneous hyperæsthesia.

Headache from eye-strain.—When a hypermetropic patient becomes the subject of neurasthenia the ciliary muscle fails ; its constant straining brings on headache. Therefore, ask if the eyes ache, and whether she has difficulty in reading small print at night. If so the refraction of her eyes should be examined, and spectacles, if required, worn.

Dental headache.—Headache may come from carious teeth if the pulp be attacked. Examine the mouth, and if you see carious spots, or if teeth are abnormally sensitive, send the patient to a dentist.

Nasal headache. — Blocking of the nasal passage may cause persistent headache. If the nostrils, or either of them, are at times stuffed up, the nose should be thoroughly examined.

Aural headache.—Disease of the middle ear may cause headache. Disease of the meatus causes purely local pain.

Dyspeptic headache.—The effect of blue pill in dismissing headache is an ancient piece of therapeutics. In the treatment of headache, to remove dyspepsia if possible and to obviate constipation

should be one of the first steps in treatment. Head finds that disease of almost any abdominal viscus may cause referred pain in the head, with superficial tenderness ; the only viscera that do not produce headache being the uterus, Fallopian tubes, and bladder.

CHAPTER V

PAIN IN THE BACK

Habitual backache. — Some women's backs always ache. An eminent lady doctor has said that women may be divided into two classes—women with backs and women without them. This habitual backache is usually in the "small of the back." It is made worse by fatigue; relieved, but not always removed, by rest. It is worse before and during menstruation, and if the bowels are costive. It is lessened by friction and kneading.

Not always due to pelvic disease.—Many suffer from this backache who are free from objective signs of disease; who are tall, upright, not anæmic, plump; who eat well and sleep well; who menstruate without other pain than the aggravation of the usual backache, and have no symptom or sign of uterine disease; and in whom there is therefore no reason for advising the patient to submit to vaginal examination.

Conditions of origin.—This backache begins when the careless activity of childhood becomes restrained by a more hampering costume, by regard for what is considered decorous, and by sedentary habits.

Conditions affecting it.—If the patient goes to a bracing health resort, it gets better. If her nervous and muscular tone become impaired it gets worse. If she marries and has children too quickly, or if she suckles too long, it gets worse. Although

it is usually relieved by lying down, many women say it is worse when they wake in the morning, and that a hard cushion under the spine relieves them. Here it seems as if the aching were due to want of support to the lumbar curve. The backache from hyperlactation is mainly dorsal, partly from the dragging of the breasts, partly from fatigue of the muscles.

Its causes.—I can only speculate about it. I believe its cause is twofold :—(1) Weakness of the muscles which hold the body erect, so that they ache because standing or walking is enough to tire them. This is why the backache is relieved by rest. (2) Why does rubbing relieve it ? Because the circulation through the muscles is imperfect, not being helped on by frequent and strong muscular contractions, and hence the muscles ache, just as a limb gets uncomfortable that is kept too long in one position.

Its prevention.—During childhood and adolescence the development of the body should be the first thing. If this is not attended to during growth, the omission can never be made up. A girl backward in her studies, if she is strong, will easily make good her mental equipment in after years. The sun and the air are wanted, and in cold weather the glow that exercise gives rather than artificial warmth. If development of the muscles by open-air games formed a part of the daily routine of every girls' school there would be fewer women with aching backs.

If this were fully recognised, suitable reforms in dress would follow. Petticoats impede the movements of the limbs, and stays minimise the activity of the muscles of the back. In growing girls the wearing of stays should be postponed as late as possible, that the muscles of the back may be free ; and

in girls' schools the wearing of gymnasium dress should be habitual rather than exceptional.

A woman who has a backache is, in a sense, ill. It does not follow that any treatment that may cure the backache is worth trying. There is no treatment that will remove habitual backache in a weakly woman.

Genital backache.—The pain in the back which disease of the pelvic organs causes is felt usually at and near the top of the sacrum. Such pain as this should suggest inquiry as to the functions of the pelvic organs. If there be disease of these organs, other symptoms will be present, and by physical examination the nature of the disease will be found out. In backward displacements of the uterus the pain is felt lower down than in most kinds of pelvic disease. In inflammation of the cervix there is often a pain at the back of the neck. I cannot explain its occurrence. Reflected pain from intrapelvic disease is felt over the sacro-iliac synchondrosis. Backache is often unilateral when its cause is not ; and in such cases the pain is three times oftener on the left side than on the right, because the left side of the body is weaker than the right.* It is a trouble more from its persistence than from its severity. It is aggravated by prolonged exertion. It is generally worse before and during menstruation.

Rectal backache.—Disease of the womb or its appendages often causes rectal trouble, and the patient may think that there is something wrong with the womb when the rectum is the part that requires treatment.

Dyspeptic pain in the back.—Pain in the back, generally between the shoulders, may come from disease of the stomach. It often extends down the arms. It is generally accompanied by epigastric

* See a paper by the author. *Obst. Trans.*, vol. xxxv.

pain. It is generally worse after meals, but there are cases in which stomach pain is relieved by food.

Dyspepsia has been described as a reflex effect of uterine disease. The relation between them is only that they are often both due to a common cause. I know of no kind of indigestion that can be cured by treating the pelvic organs.

Patients sometimes blame their livers for backache. The pain due to chronic liver disease is in the right hypochondrium and right shoulder, and is made worse by lying on the left side.

Constipation.—Fulness of the large bowel may cause lumbar pain. Costiveness is more common among women than among men. Habitual distension of the bowel leads to impairment of its muscular tone, which in its turn increases the tendency to constipation.

Retained fæces often irritate the bowel, provoke secretion from its wall and diarrhœa. Therefore, diarrhœa often indicates that the bowel is full.

Renal pain.—Disease of the kidney causes backache. It is accompanied with irritation of bladder, and with changes in the urine. The kidney will be found tender on palpation. There are often acute attacks of renal colic.

Abdominal aneurysm, a disease which causes severe and persistent backache in men, is hardly ever met with in women.

Backache from strain.—Backache in women may be produced by overstrain—that is, overstretching and probably rupture of muscle or fibrous tissue. Strain may produce backache, by injury to the pelvic floor, leading to uterine displacement. This is important, because proper treatment immediately after the injury will put it right. The treatment consists in rest in bed until the injured part has had time to recover from the injury.

Lumbago may be the explanation of backache. The characteristic feature is that it is produced by movement. The affected muscles are tender to the touch. The backache began at a definite date, and often has followed some particular chill or strain. The treatment is the same in women as in men.

Recent backache.—A patient may complain of backache of quite recent date—a few days or hours only. It may seem out of place to mention spinal caries. From the error of taking backache in a nervous woman for spinal caries " numbers of young women have been confined to a couch for months or years, and their health has been permanently damaged.".* Such pain is produced or aggravated by movement of the spine. Uterine pain is not affected by the mere act of movement, but only by the prolongation of exertion.

Pain in the sacro-iliac synchondrosis.— Women sometimes suffer from chronic pain in the sacro-iliac synchondrosis, arising from injury of that joint during labour. The seat of pain is identified by pressing upon the joint, which is tender, and by taking hold of the ilium, and moving it backwards and forwards, which causes pain. This pain is aggravated by exertion, relieved by rest. It is not met with in nulliparæ, and the symptoms always date from a confinement.

The treatment consists in rest; fixation of the joint by strapping put round the pelvis; and counter-irritation to the skin over and near the joint.

Coccygodynia.—This word means pain in the coccyx. With no physical sign of disease to account for the pain, you call the disease *coccygodynia*. Coccygodynia (as defined above) occurs in men as well as in women, but is commoner in women, and generally dates from childbirth. The patient points

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* Buzzard, "Quain's Dictionary," art. "Hysteria."

to the coccyx, and says the pain is there. She describes it as a continual aching. It is seldom so severe as to bring the patient for treatment within a few days of its beginning. You find no physical signs of disease.

Prognosis and treatment. — This disease is a neuralgia. Give tonics—iron if anæmic, quinine if appetite be bad, arsenic if there is restlessness and excitement. Advise plenty of food, and give medicines to aid digestion if needed. Inquire if the patient sleeps well; if not, find out and treat the cause. Regulate the bowels. The best tonic, if the patient can get it, is change of air to some health resort, regard being had, in choosing the place, to the time of year. If this line of treatment is perseveringly carried out, the patient will generally get well. Sedative liniments may be used; these relieve for the time, but do not cure the disease.

It has been proposed to treat this condition surgically—(a) by dividing with a fine tenotomy knife the ligaments all round, close to their insertion into the coccyx; (b) by excising the coccyx. I have seen cure from the latter, not from the former.

Dislocation of the coccyx.—The coccyx may be dislocated *backwards*. The apex of the sacrum and the base of the coccyx, which ought to be in contact, are not. Or it may be dislocated *forwards*. The dislocation forwards is the more disagreeable, for in it the projection of the point of the coccyx obliges the patient to sit upon one ischium.

These dislocations are very rare. If you should find a recent dislocation of the coccyx, the treatment would be to reduce the dislocation. Usually by the time these patients seek advice the dislocation is irreducible. In such a case the treatment is simple and successful—viz., to remove the coccyx.

Other diseases of the coccyx.—The sacrum or the coccyx may be *fractured* by violence, or be the subject of *periostitis* or of *caries*. Pain in the coccyx may be caused by either of these conditions. Their treatment is the same whether in a man or in a woman.

CHAPTER VI

CHRONIC ABDOMINAL PAIN

By "chronic" I mean pain that long persists or often recurs, and is not accompanied by acute febrile symptoms.

Pain from tired and stretched muscular and fibrous structures.—This pain is common in women because their muscles are weak, their nerves are sensitive, they are often anæmic, and therefore badly nourished. The pelvic floor aches from the fatigue of supporting the abdominal contents.

Pain of this kind is not severe, but wearies the patient by its persistence. It is referred vaguely to the back and lower abdomen and down the thighs. It is relieved at once and soon removed by lying down. But a patient may have other kinds of pain as well as this, and she may then not be freed from pain by lying down. This is the characteristic pain of uterine descent. It depends mainly on the state of the patient's nervous system. If she is sleeping badly, is anæmic, or is getting thin, it is worse ; and if she rests well, takes plenty of food, and the nervous tone improves, the pain gets better, without change in the local condition.

Chronic pelvic inflammation.—Pain may be due to chronic metritis, inflammation of the tubes and ovaries, perimetritis, congestion of the uterus from backward displacement.

This pain is referred to the lower abdomen and back, and sometimes down the thighs. It is gener-

ally a continuous pain, sometimes described as throbbing. It is remittent, severe pain alternating with slight. It is lessened, but not removed, by lying down. It is more localised than the former kind. It is aggravated by the approach of menstruation and by sexual intercourse.

Uterine contraction causes pain. This is referred to the lower abdomen and back. It is paroxysmal, each attack of pain lasting a minute or more. It is not relieved by recumbency, but is often said to be worse when the patient is lying down. Pain of this kind is often felt with fibroids. This is the true dysmenorrhœal pain.

The foregoing kinds of pain are all due to *disease in the pelvis*.

Renal pain.—This pain is over the kidney, although it often radiates over the abdomen and down the thighs ; there is tenderness on pressure over the kidney and perhaps swelling. There will also be vesical irritability, and probably pain in micturition.

The diseases of the kidney which cause pain are :—

(*a*) Renal calculus, in which the pain is exceedingly severe. If the calculus is stopping up the ureter, the kidney will be swollen and tender.

(*b*) Inflammation of ureter from other causes— a rare disease, in which the symptoms will be much the same as in calculus.

(*c*) Pyelitis.

(*d*) Malignant disease of kidney.

In these conditions the kidney will be swollen and tender.

(*e*) *Movable kidney.*—Causes of movable kidney may be divided into three groups. (1) In some it causes no symptoms. (2) Sometimes slight aching *pain* in the renal region. (3) Sometimes there

are attacks of "*strangulation*" of the kidney. The veins get kinked, and congestion of the kidney is the result There is sudden, severe pain in the abdomen, with distension and tenderness. With this there is faintness, giddiness, sweating, small rapid pulse, nausea or vomiting. The urine is scanty, high-coloured, often bloody. There is little or no fever. The kidney is swollen, and so tender that it can scarcely be examined. The symptoms reach their height at about the fourth to the sixth day and subside in from one to two weeks. One of the first signs of recovery is the copious excretion of urine of low specific gravity.

Aching kidney. — Matthews Duncan described what he called "*aching kidney*": pain in the kidney, independent of disease in the kidney. I have seen cases in which there was renal pain in women who were accustomed to drink very little fluid; and this pain has been cured by making the patient drink plenty of water.

Gastric pain.—This pain may be due to disease of the stomach : atonic dyspepsia, chronic gastritis, gastralgia, gastric ulcer, cancer of stomach, or rarer conditions. In these diseases the pain is dependent upon food. In gastralgia it is relieved by food ; in the other conditions, produced or aggravated by food, particularly solid food. Pelvic pain has no relation to taking food.

Bowel pain.—The pain may be one of the kinds of colic—painful peristaltic action.* Colic may arise from : (*a*) An indigestible meal ; if from this cause it will cease when the offending matter has been got rid. of. (*b*) Constipation. (*c*) Distension with flatus. The conditions which make the intestinal juices unable to digest food without the copious evolution of gas are in women common. (*d*) Nervous

* *See* Hawkins, *Brit. Med. Journ.*, Jan. 13, 1906, p. 65.

causes. (*e*) Lastly, there is lead colic, recognised by the blue line on the gums.

Intestinal colic is distinguished by the following features :—

(1) It is a pain which rolls about the belly.

(2) It is not relieved by position. The pain caused by displacements is removed, and that of congestion or of peritonitis is relieved, by recumbency, but aggravated by walking about. This, by distracting attention, causes the pain of colic to be less felt.

(3) If pressure on the abdomen has any effect on the pain of colic, it is to relieve it. Patients with inflammatory pain cannot bear firm pressure, and it has no influence on the pain of displacements.

(4) It is relieved by the passage of flatus, or by the free emptying of the bowel.

Peritoneal pain.—Pelvic peritonitis may lead to adhesions about the sigmoid flexure. During the propulsion of fæcal masses along the colon these adhesions are pulled upon, and thus there is pain *just before* defæcation. There will also be symptoms and physical signs of pelvic peritonitis. But the pain will resemble colic in being dependent upon defæcation, and in being pain which shifts its seat.

Biliary colic.—The pain of biliary colic can hardly be taken for pain due to pelvic disease. Its exceeding severity, sudden onset, and sudden cessation when the stone has passed, its being accompanied by jaundice—all these features mark it off from pain of uterine or ovarian origin.

Visceral neuralgias.—Some pains felt in the abdomen are neuralgic.

In the diagnosis of visceral neuralgias we rely mainly on the following features :—

1. The absence of signs of disease in the painful part.

2. The character of the pain: it occurs in paroxysms. It may, however, be constant, not paroxysmal. It is often combined with pain of similar character in other parts.

3. The effect of treatment. Neuralgic pains vary with the patient's health. Neuralgic pain is almost always relieved by alcohol, and is not relieved by position.

4. The patient's physique, temperament, and habits. The patients subject to neuralgic pains are :—

(1) Those whose nervous systems have been weakened by anæmia.

(2) Patients worn out by want of sleep.

(3) Persons of originally neurotic temperament. A " neurotic temperament " means a too sensitive nervous system, which usually goes with a weak muscular system.

Neuralgic pain may complicate pain of other kinds. Pain due to local disease is cured if the local disease is cured ; but if the pain is neuralgic, local treatment will be a failure:

CHAPTER VII

METHOD OF INVESTIGATION

In this chapter I describe how to investigate common gynæcological cases in private practice.

Extent of routine examination.—Examination of the genital organs should be restricted to what is absolutely necessary. If by digital examination you find enough to account for the symptoms, there is no need to inspect the parts or to use a speculum or sound.

Interrogation of the patient.—First take down the patient's name, age, address; whether single, married, or a widow; the number of children and miscarriages, with the date of the last pregnancy; if sterile, the date of marriage.

Then ask: What is the matter? From the reply you learn the patient's principal complaint—pain, hæmorrhage, discharge, or whatever else it may be. Question her with the view of defining this symptom.

Having got a clear understanding as to the principal trouble, then inquire as to the functions of the pelvic organs. Ask as to menstruation; as to any intermenstrual discharge; as to micturition, whether painful or too frequent. Inquire whether defæcation is painful. Ask if there is any irritation, soreness, or swelling about the external parts. If the patient has not told you enough to explain why she seeks advice, and is married, inquire whether marital intercourse is painful.

Ascertain next the state of the general health. Ask if appetite is good ; whether the bowels are regular. Ask if the patient sleeps well ; if she is nervous. Inquire if she has lost flesh lately.

If the symptoms give a reasonable presumption of local disease, tell the patient that you cannot treat her properly unless she allows you to make a local examination.

Preparations for examination. — Bid the patient loosen all the bands round her waist, let the garments to which they belong fall as low as her hips, and take off her corsets. Then let her lie on her back on a hard couch, with her knees bent ; and draw up her underclothing so as to expose the abdomen.

Abdominal examination.—Look to see if the abdomen is enlarged. If enlarged, feel if it fluctuates, and if it does, pass a catheter. Note the position and extent of dulness and resonance respectively. Then palpate. You ought to be able to press your fingers deep down into the pelvis. If you cannot, it may be for one of two reasons—(1) the abdominal muscles are held rigid, because either (a) the patient is nervous, or (b) the parts underneath are tender ; or (2) there is a swelling in the pelvis. Talk to the patient, pressing all the time steadily on the abdomen. If the rigidity is only from nervousness, in a little while the muscles will yield. If there is tenderness or swelling, define its outline. Define surface tenderness by lightly touching or stroking the skin with the head of a pin.

Bimanual examination.—Standing or sitting (according to the height of your couch) on the right side of the patient, place your left hand on the lower part of the abdomen, pass your right hand under her right thigh, and insert the forefinger (previously lubricated with sublimate glycerine 1–2,000) into

the vagina. Or let the patient lie on her left side.
The preferable position is on the back, for in it you
can better judge of the relation of parts (Fig. 1). But
when the patient is on her side, the vaginal finger can
reach a little higher. In either of these positions
you can explore the parts to the right of the uterus
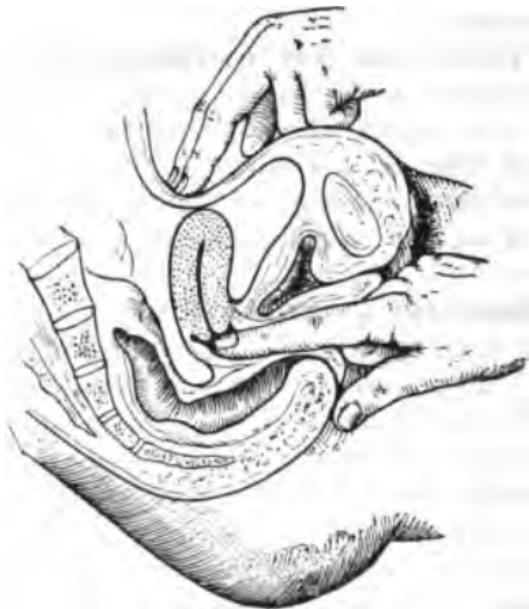
Fig. 1.—Bimanual examination.

better than those to the left. If the case is one in
which you have difficulty in judging of the state of
parts to the left of the uterus, examine with your
right hand on the abdomen, your left forefinger in
the vagina. The vaginal finger informs you of the
condition of the vagina, and of the cervix. Ascertain
by the bimanual examination the size, shape, position,
and mobility of the uterus, and the presence or absence
of any swelling in the pelvis other than the uterus ;
if present, its size, shape, position, and mobility. In
many cases there is no need to go further.

Inspection.—Should the patient complain of pain, itching, soreness, or swelling of the vulva, or if your vaginal finger has perceived any abnormal tenderness or configuration of the vulva, you must inspect this part. Put the patient so that a good light is thrown on it, and separate the labia.

Fergusson's speculum. —If discharge is a prominent symptom, or if the nature of the
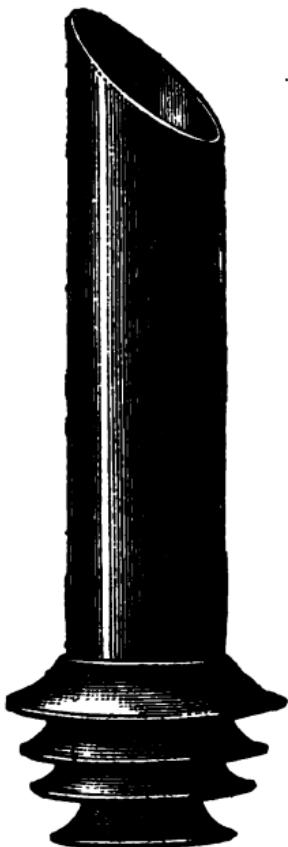
Fig. 2.—Nest of celluloid specula.
C

Fig. 3.—Speculum forceps.

case is not yet clear, you must look at the cervix and vagina with a speculum. The best speculum for most cases is Fergusson's, which you can use without an assistant. You get the best illumination from one made of silvered glass ; but these are apt to break. Made of celluloid, they do not break ; they give enough light, and are so thin that four sizes will fit one within the other (Fig. 2). In introducing
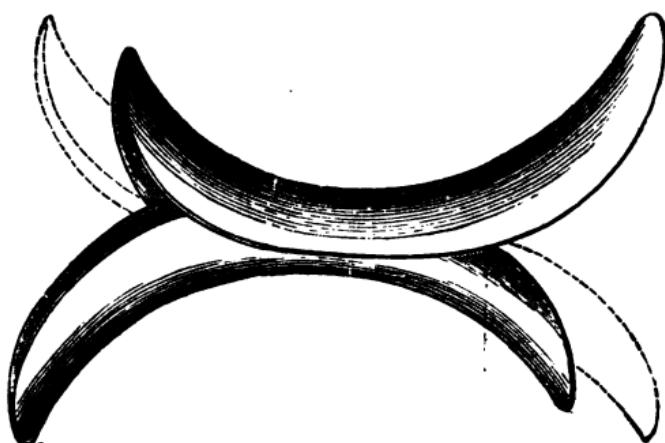
Fig. 4.—Neugebauer's speculum modified by Barnes—the " crescent " speculum.

Fergusson's speculum, remember that the chief resistance is that of the perineum. Hold the speculum with its longest side backwards. The bevelling allows you easily to get its tip within the vaginal orifice, in front of the perineum. Then press the perineum back, as you move the speculum on. This done, you will generally find the vaginal portion of the cervix lying in the end of the speculum. Clean it with absorbent wool held in the grasp of a speculum forceps (Fig. 3).

The bivalve speculum.—In a few cases the uterus leans so much forward that the os uteri lies against the side of the speculum, and you can only

see the anterior part of the vaginal portion. If so,
you must use a different speculum. The best for
such cases is Barnes's " crescent " modification of
Neugebauer's speculum (Fig. 4). The extreme di-
vergence of the ends
of this instrument some-
times stretches the va-
gina too much, and
hurts the patient; Dr.
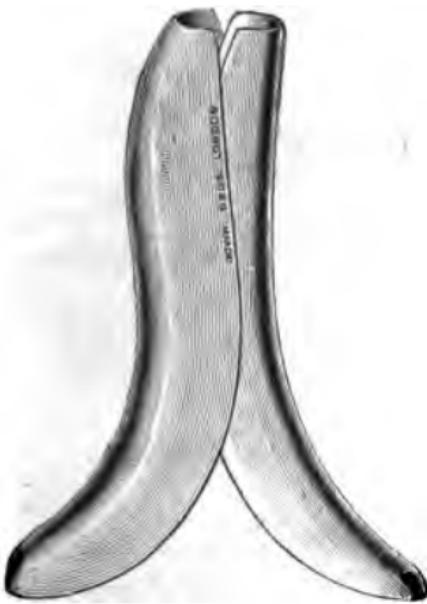
Fig. 5.—Roper's modification of   Fig. 6.—Sims's "duckbill"
Barnes's " crescent" speculum.   speculum.

Roper has modified its shape so as to prevent
this (Fig. 5). But in some cases the great divergence
of Barnes's instrument is what you want. The " duck-
bill " speculum of Marion Sims (Fig. 6), used in the left
lateral semi-prone position, enables you to fix a hook
or volsella into the cervix, and pull it down so as to
inspect it thoroughly. But you cannot do this with-

out an assistant.   You also need a table.   The patient
is placed on this with her hips close to its edge.   Her
left arm is placed behind her back.   Her left thigh
and knee are slightly bent, her right thigh is much
bent.   The right buttock is held up by the assistant
(Fig. 7).   The speculum lifts the posterior vaginal
wall away from the anterior, so that you then see the
cervix and the anterior vaginal wall.   In a few cases
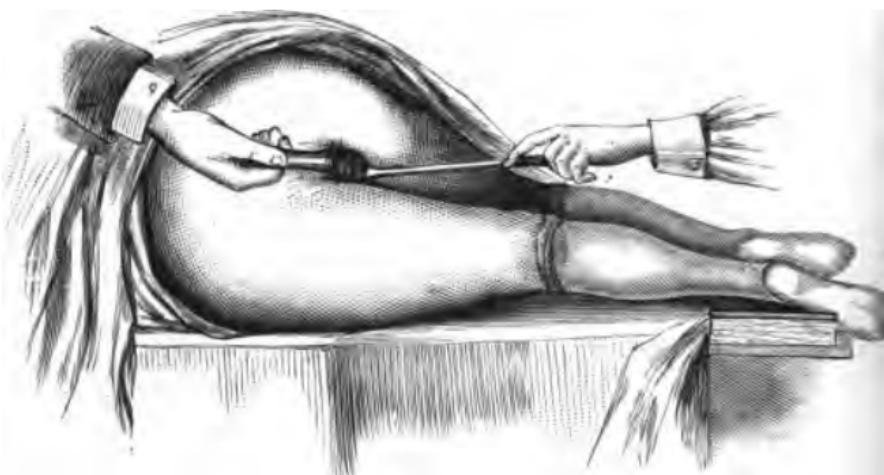
Fig. 7.—Position of patient for examination with
"duckbill" speculum.

—such, for instance, as doubtful cancer—This is an
advantage.   It is excellent for hospital practice,
but inconvenient and seldom necessary in private.

The volsella.—Two kinds of volsellæ are sold,
one with sharp teeth which stick into the cervix, and
one with blunt teeth, which hold the cervix by com-
pressing it.   It should fasten with a clip (Fig. 8).
See that the teeth fit nicely into one another when
the instrument is closed.   A tenaculum is easier to
apply, but holds less firmly (Fig. 9).   The use of
the volsella is to pull the cervix down that it may
be seen, and that the sound may be more easily
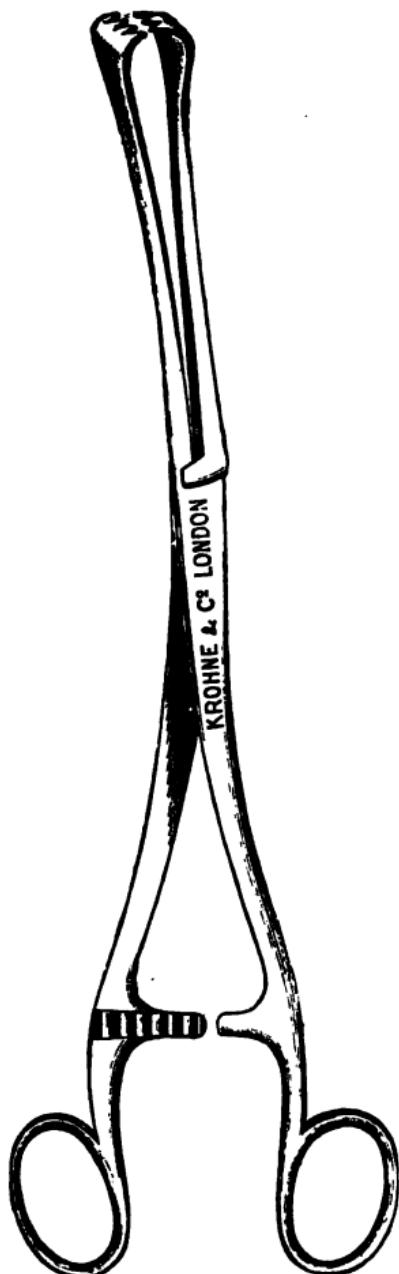
Fig. 8.
Volsella.

Fig. 9.
Tenaculum.
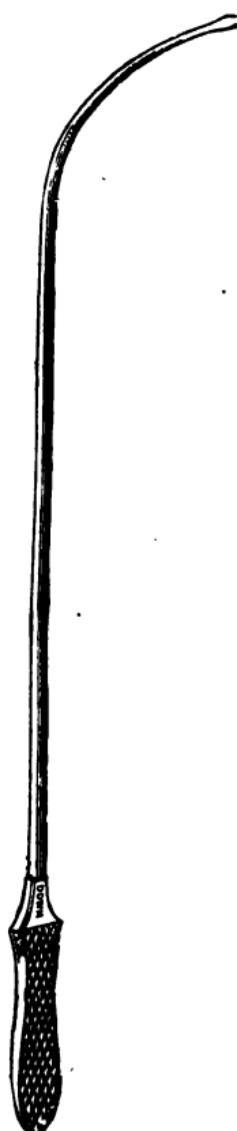
Fig. 10.
Uterine sound.

passed, or the back of the uterus examined by the rectum.

The sound. — There are cases in which a swelling in the pelvis is in such close relation to the uterus that you cannot bimanually feel the distinction between them. In such cases you can only find out the position and length of the uterine cavity by passing a sound (Fig. 10). Occasionally you cannot by bimanual examination make out where the body of the uterus is, or how big it is. In such a case, if you can exclude pregnancy, you may use the sound to get this information. The sound hurts the patient, and is seldom required by one skilled in bimanual examination.

To use the sound put the patient on her left side. Bend the sound so that its shape may correspond to what you take to be the probable course of the uterine canal and the angle that it makes with the vagina. Lubricate it with sublimate glycerine. Pass the right index-finger up to the os uteri, and with it guide the point of the sound, which is held in the left hand, into the os uteri. Then pass it gently up till its point is arrested by the fundus.

The catheter.—If your patient complains of painful or too frequent micturition, look at the meatus urinarius, and then pass a catheter. Do this (1) to get a specimen of urine free from admixture ; (2) to notice the presence or absence of great tenderness of the urethra or bladder, and, if present, its site ; the presence or absence of stricture ; and the size of the bladder. The catheter ought to pass four inches from the meatus. When the catheter touches a healthy bladder you can push it on another inch, and the bladder will push it back again when you cease pressing, but in a tender or contracted bladder you cannot do this.

Rectal examination. — If there are any

symptoms referred to the rectum, make a digital examination of the bowel. If bimanual vaginal examination has not made you sure as to the state of things, make a bimanual rectal examination (Fig. 11). By this method you can reach rather higher than by vaginal examination, and you can better

Fig. 11.—Bimanual rectal examination.

ascertain the boundaries and relations of swellings behind and at the side of the uterus. Sometimes, especially when there is a lump behind the uterus, you must examine with one finger in the rectum and another in the vagina.

Examination under anæsthesia. — When examination is very painful or difficult examine the patient under anæsthesia. The most perfect exploration of the pelvic organs possible without opening the belly is gained by the bimanual rectal examination, with *two* fingers in the rectum.

PART II.—CHRONIC PELVIC PAIN

CHAPTER VIII

SO-CALLED CHRONIC OVARIAN PAIN; OR CHRONIC OÖPHORITIS

CHRONIC pain referred by the patient to a spot somewhere over the ovaries, but without physical signs of disease, is common; and is often described as "oöphoralgía" (ᾠόν, the ovum; φορέω, to bear; ἄλγος, pain) or "chronic oöphoritis" because some think that the pain is in the ovary, and others think that the ovary is in a state of chronic inflammation. But in most cases described by these names, the pain is not in the ovary; and changes that cause the ovary to be painful are rare.

Kinds of Pain.—Pain referred to the lower abdomen may be one of four kinds: peritoneal pain; reflected pain; neurasthenic pain, and hysterical pain.

1. *Peritoneal pain.* — When the peritoneum is inflamed, it becomes painful. Pelvic peritonitis may extend to the ovary; and thus, in peritonitis, there may be real ovarian pain along with the peritoneal pain. The pain of peritonitis is local: it is felt over the inflamed spot, and not in the back. Pelvic peritonitis leads to the exudation and organisation of lymph, whereby adhesions are produced, the movement of the uterus is restricted, and a palpable swelling is produced. Ascertain whether the uterus is movable or fixed. If the uterus and ovaries move

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freely, and there is no abnormal swelling, the case is not one of chronic peritoneal pain.

2. *Reflected pain.*—I quote from Dr. Head's article in " Quain's Dictionary " : " When impulses pass up sensory sympathetic nerves from an organ which is diseased, they set up a disturbance in the segment of the nervous system to which they are conducted. Now any second sensory impulse from another part—for example, from the surface of the body—which passes into this same segment will be profoundly altered, for it no longer falls into a normal and quiescent segment of the nervous system, but into one whose activity is already disturbed. The resultant stimulus conducted upward towards the brain therefore differs from that which would have passed onwards from that segment under normal circumstances. The second stimulus will appear to be exaggerated, or may, perhaps, undergo some actual increase in its passage through the excited segment. Thus any otherwise painless stimulation applied to the surface of the body falling within the area supplied by fibres that enter the disturbed segment will appear to be painful, and the skin will be said to be tender."

All abnormal states of the female genitalia are liable to lead to reflected pain accompanied by superficial tenderness over the areas supplied by nerves coming from the tenth dorsal to the second lumbar, and from the first to the fourth sacral segments. The ovary appears to be mainly associated with the tenth dorsal.

This reflected pain, with superficial tenderness, differs from that of peritonitis in that it is present in the loin and over the sacrum and upper part of the thighs. As a rule it is relieved by deep pressure ; with peritonitis there is no superficial tenderness, and deep pressure increases the pain in proportion

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to the amount of force used. This reflected pain and superficial tenderness may be felt over the whole of
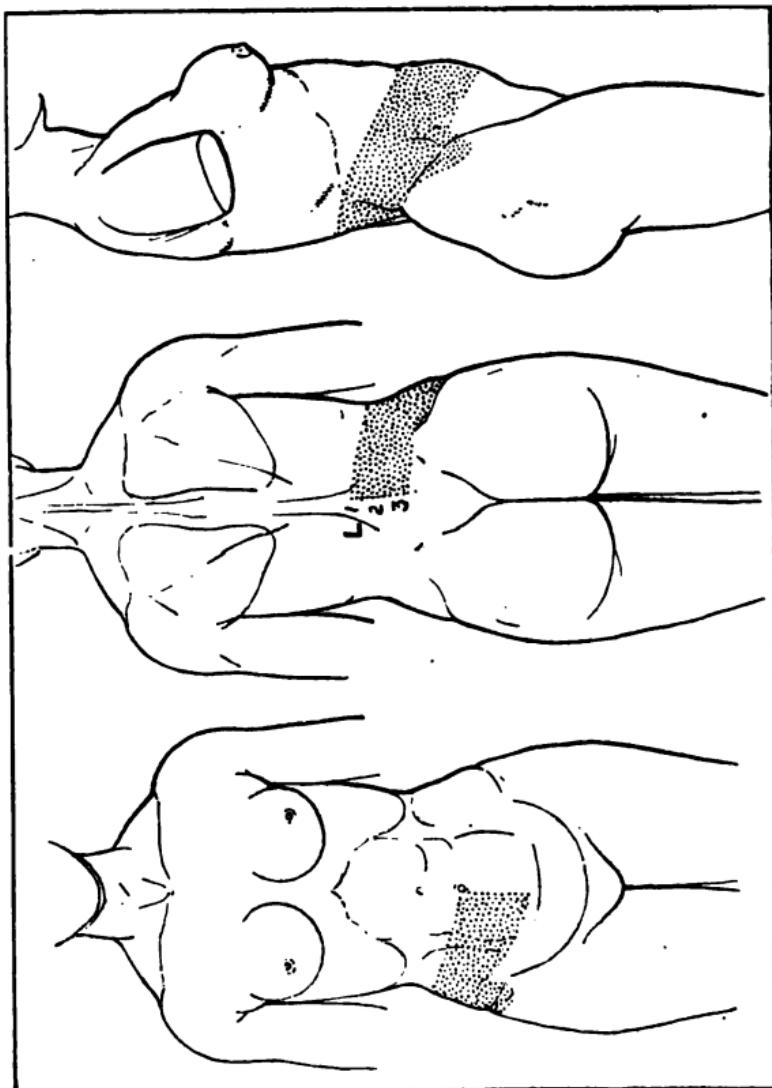
Fig. 12.—Situation of superficial tenderness accompanying ovarian pain. (*After Head.*)

the area supplied by the segment involved—that is, in the case of the tenth dorsal segment, over a more or less horizontal band running from the middle line

of the back to the middle line in front; or, if less acute, it may be present only at a point of maximum sensitiveness, about halfway between the umbilicus and anterior superior iliac spine.

Pain and tenderness in this spot may be produced by disease of the bowel, uterus, Fallopian tube, liver, gall bladder, kidney, or ureter. It is pain and tenderness of the skin, not of the ovary. Pain felt in what is called the ovarian region may thus be produced by disease of the generative organs other than the ovary : erosion of the cervix, prolapse, retroflexion, cancer, and, above all, disease of the Fallopian tubes. Inflammation of the Fallopian tubes may at first cause only reflected pain and afterwards peritoneal pain, when the inflammation has reached the peritoneum. The origin of reflected pain is in most cases to be determined by the physical signs.

Surface tenderness is most marked, as a rule, just before and during menstruation.

3. *Neurasthenic pain.*—Any condition which decreases the resistance of the nervous system will cause widespread visceral reflected pain. Among the common causes which illustrate this law are (*a*) anæmia, (*b*) the cachexia caused by wasting diseases, (*c*) a sudden rise of temperature, (*d*) menstruation.

This breakdown of resistance may also be produced by mental causes, or may be due to some inherent defect in the nervous system of the individual. Patients suffering from neurasthenia are particularly liable to widespread visceral pain.

Neurasthenic pain is more common on the left side than on the right. The reason is that the left side is weaker than the right in power of resistance to painful impressions. This is illustrated by the fact that in cancer, which has no preference for one side, pain is more common on the left side.* So it

* *See* Champneys, *Obst. Trans.,* vol. xxii.

is in displacements of the uterus,* and in the pain down the thigh from hæmorrhoids. Most cases of so-called oöphoralgia or chronic oöphoritis—that is, pelvic pain without local signs of disease—are really cases of neurasthenic pain.

4. *Hysterical pain.*—There are many cases in which the so-called ovarian pain is present, and is due to neurasthenia or hysteria, or a combination of them, there being no disease of the ovary or of any other pelvic organ. In such cases local treatment will be a failure, and may be injurious. In neurasthenic pain, local treatment, if not of a painful or mutilating kind, does no particular harm. In hysterical pain local treatment is the worst possible treatment: it fixes the patient's attention upon her pain, and thus aggravates and extends it.

Types of cases.—There are four classes that I have clinically recognised of chronic pain in the regions supplied with sensory nerves from the tenth dorsal segment of the spinal cord, without any physical signs of disease in the pelvis. These are :—

    1. Cases of nervous exhaustion from child-bearing.

    2. Cases dependent upon menstruation.

    3. Cases due to alcohol.

    4. Cases due to frequent sexual excitement without gratification.

Pathology: why thought inflammatory.—Some call this morbid condition "chronic ovaritis," and as reasons for doing so they point to its persistent character, and to its relief by treatment such as relieves inflammation. This so-called chronic ovaritis is a common disease, but the experience alike of those who make *post-mortem* examinations and of surgeons who often open the abdomen shows

* *See* a paper by the author, *Obst. Trans.*, vol. xxxv.

that inflammatory change in an ovary without adhesions is rare. We know nothing of chronic inflammation of freely movable ovaries.

How to feel the ovaries. — For the right ovary, put two fingers of the right hand into the vagina and your left hand on the abdomen. To feel the left ovary, put two fingers of the left hand into the vagina and the right hand on the abdomen. Get the body of the uterus between the fingers in the vagina and the hand outside. Running from its upper corner you will feel the cords formed by the Fallopian tube and ovarian ligament. Follow these outwards with the hand and fingers, and they will guide you to the ovary.

A patient whose ovaries are tender, when you try to do this will make her abdominal muscles so rigid that you cannot do it, even if she will tolerate your trying. If in doubt examine under anæsthetic.

Tubal inflammation formerly taken for ovarian inflammation.—Anatomists and surgeons find that inflammation of the Fallopian tubes, and their distension with fluid, are common. I think that the cases which were formerly described as inflammation of the ovary were really cases of inflammation, swelling, and distension with fluid of the Fallopian tube.

Changes in the ovary supposed to be causes of pain.—Two conditions have been described as morbid changes due to inflammation, and as being the cause of pain in the ovary. One consists of enlargement of the organ by the presence of numerous small cysts, together with much dense fibrous tissue between the cysts. This has been given the name of " *sclero-cystic disease* " of the ovary, and has been said to be the cause of pain.* This disease

* For references, *see* a paper by the author, "On So-called Chronic Ovarian Pain," *Brit. Med. Journal*, Oct. 22, 1904.

is commonly seen with large uterine fibroids, and such
patients, unless there has been peritonitis, are usually
free from pain. With small ovarian cysts, pain is rare.

Cirrhosis of the ovary.—In this condition the
ovary is smaller than usual, wrinkled on the surface,
and apparently composed of fibrous tissue ; it has,
in fact, come to resemble the ovary of a healthy old
woman. If this senile degeneration occurs early in
life it is by some considered pathological, and the
cause of pain. It is certain that in the elderly these
shrunken fibrous ovaries do not cause pain. We do
not know the normal rate and degree of the shrinking
of the ovaries which goes on in healthy women.

**Relation of sclero - cystic disease to
"cirrhosis."**—That a small sclero-cystic ovary
may grow into a cyst large enough to require removal
on account of its size, I think is likely. I know of no
evidence that a sclero-cystic ovary ever becomes a
cirrhotic one.

What cirrhosis of the ovary is.—No one
ever supposed cirrhosis of the ovary to be a disease
until surgeons began to open the abdomens of nervous
women because they had pain. Those who did this
took any unusual appearance in the ovary to be
disease, causing pain. The results of such operations
are disappointing, because, in cases of pain in women
who have no physical signs of disease, the pain is
not in the ovary, or caused by the ovary : it is in
the nerves of the skin, and is due to neurasthenia or
hysteria. The only cases in which pain of this kind
is cured by oöphorectomy are the cases in which the
pain is secondary to dysmenorrhœa. These are cured,
but not at once. They are cured, not because dis-
eased organs have been removed, but because men-
struation has been stopped.

**Supposed causes of chronic inflamma-
tion of the ovary.**—Acute oöphoritis occurs in

severe infectious diseases, in typhus, scarlatina, etc. ; in childbed ; from operations on the genitals performed with imperfect antiseptic precautions. These causes produce catarrh of the tubes, and so salpingo-oöphoritis.

I now take the subject from its clinical side. I speak of cases in which there is pain without any morbid condition that can be detected by examination.

1. **Chronic pain following childbirth.**— This is the commonest. It occurs chiefly in women who have had many children quickly. Such patients have generally lost flesh. They usually suffer also from atonic dyspepsia. They are long in going to sleep, wake frequently, and have disagreeable dreams. They are nervous, reflex irritability is increased. They cannot concentrate attention, and memory is bad. Many·suffer from headaches and facial neuralgia. These symptoms are those of nervous exhaustion. The morbid states form a vicious circle. Want of sleep exhausts the nervous system, and nervous exhaustion prevents sound sleep. Weakness of digestion impairs nutrition, and the discomfort after food helps to prevent sleep. The nervous exhaustion causes the pain, and the pain, in its turn, aggravates the nervous exhaustion. Other local symptoms are variable, because they mostly depend on other conditions co-existing. If there is any morbid change in the ovary, it probably is that the venous congestion, produced by the great vascular development of pregnancy, persists.

Treatment.—(i.) *Rest :* physical, mental, and emotional. The best treatment is to take the patient from home. If she is poor, get her into a hospital. If she is above the hospital class, and has friends who can receive her and treat her as an invalid, urge that she go to them. Failing this, arrange for her

treatment in a surgical home. Wherever it be, she must lie in bed. I do not say that patients never get well if treated at home, but they get well more quickly away from home.

In the treatment of disease attended with nervous exhaustion, galvanism and massage are good, because they prevent the effects of inaction on the muscles, and they may make the patient hopeful. But they are not necessary. If the patient be not affluent, they are hardly worth their cost.

(ii.) *Sleep.*—See that the patient sleeps. Do not give opium ; nor chloral. Give sodium bromide, ten or fifteen grains three times a day to lessen reflex irritability. Before the patient has been taking it for a fortnight she will be sleeping better, and feeling less nervous. Do not continue it for more than a fortnight.

(iii.) *Appetite.*—If, when sleep has been procured, appetite is still deficient, give tonics—quinine, nux vomica, iron, etc., in various combinations.

(iv.) *Counter-irritation.*—One way of relieving pain is by counter-irritation. Order a blister, 2 in. by 2 in., to be applied on the abdominal wall every three or four days. Lin. iodi, painted over the lower abdomen twice a week until the skin is sore, is useful. Martindale's lin. capsici co. is a good application.

(v.) *Hot vaginal douches* are commonly prescribed. They keep the vagina clean ; if hot (112° F.), they may act as a counter-irritant applied to the vagina.

(vi.) *Drugs.*—There is no drug that will take away pain from neurasthenia. If the patient be anæmic, give her iron.

(vii.) *Conjugal life.*—Give no injunctions about sexual intercourse unless you are certain they are needed. Ask the patient whether she would like you to say anything to her husband about it, and, if so, support her wishes with your authority.

(viii.) *Treatment of uterine disease.*—If an erosion is present, it should be treated and cured. If there is any descent of the uterus, a pessary should be worn.

How long should this treatment be continued?—Ask for two months' treatment. In slight cases a few days' treatment may be enough. If the patient has suffered long she may not be well at the end of two months' treatment; but she will be better. If improvement ceases, remember that long inaction weakens the muscles; that a self-centred life has a bad influence on the patient; that her abstention from family duties may be an injury to those to whom she is bound, and react upon her own happiness.

Change of air and scene is the most potent tonic. In the choice of place be guided by the patient's former experience of health resorts, her personal preference, and the season of the year. Above all, tell the patient as emphatically as you can that she has no organic disease. Direct her so that her life shall be easy.

2. **Primary menstrual pain.** — Slight pain before and with menstruation from congestion of the pelvic organs is common. Some neurasthenic or hysterical women lie up. Imperfect development of the uterus does not cause menstrual pain, for it is often seen without it. I have seen patients in whom inquiry revealed nothing that might have been expected to cause disease or interfere with development, and who yet suffered so much each month as to be laid aside from active life for some days.

Treatment.—If the pain has followed some influence capable of lowering health, treat the case as I have advised in the preceding paragraphs.

Hysterical pain is influenced by the amount of attention that is paid to it. Therefore remember

that the patient 'may get well without treatment. Remember, also, that prolonged confinement weakens the nervous tone, and that local treatment directs attention to the parts treated, both effects being harmful.

3: **Reflected pain secondary to dysmenorrhœa.**—In dysmenorrhœa of the spasmodic kind, associated with sterility, reflected pain sometimes becomes added to the uterine pain, and gradually comes to last longer and longer till at length it may become continuous. This pain is only to be cured by curing the dysmenorrhœa.

This is the one and only kind of pelvic pain that can be cured by removing the ovaries. When menstruation has been stopped the pain gets well ; not immediately, but within a few months. But the cure is effected, not by removing disease, but by stopping menstruation.

4. **Pelvic pain from alcohol.** — This is usually met with in women no longer young. You may suspect alcohol from the patient's fat, florid, and puffy appearance, and your failure to find any other cause. The pain has come on gradually during later years. If you inquire into every detail of the patient's diet, both from her and (out of her hearing) from her friends, you will get the facts as to alcohol without suggesting that that is the point you are specially aiming at. This kind of pain is cured by inducing the patient to leave off alcohol.

5. **Sexual causes.** — (*a*) Certain modes of evading pregnancy which prevent the female from completing the sexual act cause in some women neurasthenic pain. This kind of ovarian pain is cured when the practice is left off. Fruitless attempts at intercourse by an impotent husband may have the same effect. (*b*) Excessive sexual intercourse has been, in books, blamed for ovarian pain. Its usual

result is hæmorrhage from the uterine mucous membrane. If congestion is not thus relieved, ovarian pain may be produced. What excess is, depends upon the patient. A frequency of intercourse not greater than the patient's wishes demand does no harm, but frequent submission to intercourse when desire is absent and the act incomplete leads to pain. The history is that ill-health dates from soon after marriage, and that if since marriage she has been away from home by herself she has been better. (c) Masturbation and ungratified sexual desire in the unmarried have been stated to be causes of pelvic pain.* Marriage is sometimes advised for pelvic pain. If such advice is given conjecturally, it may do much harm. If asked as to the effect of marriage upon health, make no statement unless to the mother or a married friend of the patient, to whom you can explain that this depends upon the presence or absence of sexual feeling in the patient.

6. **So-called "exanthematic oöphoritis."** —It is known that in acute febrile illnesses suppuration of the ovary occasionally occurs, for it has been found after death. It is not uncommon, after an acute illness, for young women to complain of pelvic pain. The nervous system is weak, and the patient suffers from neurasthenic pain. Rest, liberal diet, and tonics remove this pain.

The surgical treatment of chronic ovarian pain. — In chronic pelvic pain with neurasthenia, attempts have been made, on the hypothesis that the pain was in the ovary, to cure pain by surgical means not involving the complete suppression of ovarian function. Pozzi, of Paris, introduced first "ignipuncture," then "resection," of painful ovaries. The results of ignipuncture have

* *See* Balls-Headley, "The Evolution of the Diseases of Women," *passim.*

been disappointing. Resection of the ovaries—that is, cutting out a large wedge of ovarian tissue, and sewing together the opposite surfaces of the gap left, produces temporary benefit; but in most cases the pain returns.

Prolapse of the ovaries.—The ovaries are sometimes tender; one or both may sink down behind the uterus, so that it can be pressed upon either by way of the vagina or by way of the rectum. If an ovary is thus displaced and tender, there will be pain (1) on sexual intercourse, and (2) during the passage of scybala : in each case from pressure upon the tender ovary. The pain is often described as lasting an hour or so after the cause which provoked it. There is no anatomical change that we know of in the ovary in such cases. Such prolapsed and tender ovaries are only found in neurasthenic women. When the nervous energy of such women is restored, their ovaries cease to be tender, even if they remain prolapsed. The treatment is (1) to protect the tender ovary from contact by a thick soft ring pessary ; (2) to prevent the formation of scybala by keeping the bowels slightly relaxed ; (3) to help the patient to eat, sleep, and rest.

CHAPTER IX

CHRONIC UTERINE PAIN; SUBINVOLUTION AND CHRONIC METRITIS

CHRONIC pelvic pain may be a continual aching of the uterus. Just as ovaries have been thought on clinical grounds to be inflamed, so it has been thought that a uterus the seat of chronic pain must be inflamed ; and the condition has been called " chronic metritis." Such aching uteri are generally large, because involution after childbirth has been incomplete. An account of this disease therefore comprises four things :

    1. The involution of the uterus.
    2. The causes of subinvolution.
    3. The effects of subinvolution.
    4. The chronic uterine aching known as chronic metritis, chronic engorgement, and chronic areolar hyperplasia.

   1. The involution of the uterus.—On the day after delivery the uterus weighs from a pound and a half to two pounds and a half, and its fundus reaches as high as the umbilicus. Its return during the lying-in period nearly to the dimensions it had before pregnancy is called " the involution of the uterus." Generally by the twelfth day after delivery the fundus uteri is no longer above the pelvic brim. Two weeks after delivery the uterus weighs about half a pound, and three weeks after delivery from four to six ounces. Involution is in most cases complete at the end of two months.

How involution is effected.—The *peritoneal* covering of the uterus becomes smaller, and the wrinkles present in it after delivery are smoothed away. There is atrophy—that is, diminution in volume—of the muscular fibres, a shrinking alike of muscle and connective tissue. There is probably a sort of peptonisation which makes the contents of the muscle cells more soluble, so that they can pass into the lymph stream ; but no fatty change. The atrophy goes on simultaneously and equally at all parts of the uterus alike. The connective tissue first becomes granular, and then gradually diminishes and disappears.

During the last few days of pregnancy and the first few days of involution giant cells with many nuclei are to be seen. They are not seen after the sixth day of involution. Their function is probably to eat up the waste material lying about them.

The veins are compressed by the contraction of the muscular bundles. Some of them become pervious again. Some are gradually obliterated, and disappear. In some of the veins the vessel wall becomes permanently thickened. Some arteries become obliterated ; in the larger ones there is a proliferative endarteritis. At the end of involution the connective tissue around the arteries is increased in quantity, the arterial muscular wall is hypertrophied, and the inner wall thickened. On section, the arteries project beyond the surrounding surface, and present thick yellowish white walls, more opaque than the tissues around.

It is so common for involution to be not quite complete that in text-books of anatomy it is stated that the parous uterus is normally larger than the virgin uterus. When involution is thus incomplete, the condition is called *subinvolution*. In a few cases the involution goes on to such a degree that the

uterus becomes smaller than it was before pregnancy. This is called *superinvolution*, or *puerperal atrophy of the uterus*.

The morbid anatomy of subinvolution. —We know of no constant difference, except in size, between uteri which a few months after delivery still remain large, and those which have returned to the ordinary size of the unimpregnated uterus. General enlargement of the uterus with pelvic pain and other symptoms is known as " chronic metritis," and some writers have described subinvolution and chronic metritis as being identical. Histological changes have been described and photographed in uteri the subjects of chronic metritis, and it has been assumed that these changes were morbid. It is not certain that they are anything more than the result of age and childbearing, for we have no exact knowledge of the changes in the uterus that result from age and childbearing. It has been said also that they are due to infection, but the evidence of infection is weak.

2. **The causes of subinvolution.** — For perfect involution of the uterus to take place, the patient during the lying-in period should be healthy, and the uterus contracted. Therefore, after *postpartum hæmorrhage*, subinvolution is apt to be present, especially when there is *retention of a bit of placenta or membrane*. When there is *fever*, involution is retarded, especially if there is *inflammation in the pelvis*. When women have had *many children*, involution does not take place so perfectly as after their earlier labours.

3. **Effects of subinvolution.**—Subinvolution in itself produces no disturbance of health. But a tissue that is in any way degenerate is more vulnerable to adverse influences than one which is healthy. A uterus not well involuted is more liable to morbid changes than a healthy uterus.

Subinvolution of the vagina. — During pregnancy the vagina develops as well as the uterus. After delivery it undergoes involution. In women who have had many children the involution of the vagina is often incomplete ; the canal remains larger, its mucous membrane thicker, with larger rugæ. This subinvolution renders it more liable to catarrh.

Treatment of subinvolution. — (A) *Preventive*. During childbed subinvolution is to be prevented (1) by taking care that no part of the placenta or the membranes is left behind in the uterus. (2) By the daily administration of ergot for three or four weeks after delivery. This drug has no effect upon normal involution, and therefore if everything is normal the drug is unnecessary. But when any condition is present that prevents proper contraction of the uterus, ergot will hasten involution by making the uterus contract. (3) By not allowing the patient to resume activity too soon. (B) *Curative*. If the patient become pregnant, the uterus may in the succeeding puerperium return to its natural size, or even become smaller.

4. **What is chronic metritis?** — Chronic metritis is a clinical term, meaning a uterus which is enlarged, painful, and tender. There may be other changes in such a uterus, but there are none constant enough to characterise the disease. There is no good evidence of inflammation. For this reason Gaillard Thomas called the disease *chronic areolar hyperplasia*. Subinvolution causes no symptoms, and is described as a normal condition in text-books of anatomy. Nevertheless, such a uterus is more liable than a healthy one to morbid changes resulting from disturbance of the circulation through it. The term " chronic metritis " fits the clinical history.

Pathology of chronic metritis. — This is hypothetical, because we only know the disease clinic-

ally. The uterus aches, as an œdematous leg aches, or as a testicle, the veins of which are varicose, aches. A uterus which is imperfectly involuted receives more blood than it should. This is shown to be the cause of the pain by the temporary relief which almost always follows local depletion. There is transudation through the vessel walls, which becomes organised into fibrous tissue. Hence imperfect nutrition of the nerve-endings, and compression of them by the exudation.

Symptoms of chronic metritis.—The great symptom is a persistent aching, not a severe pain. It is lessened by lying down, but not removed. It is worse during the week preceding menstruation; better during the week which follows it. The flow is generally profuse, because, the uterus being enlarged, there is a larger surface to bleed; but sometimes it is scanty. There is generally leucorrhœa from accompanying vaginal catarrh; often also from cervical endometritis. There are often bladder irritation and smarting in micturition; these symptoms vary much from time to time in the same patient. The disease is often associated with hæmorrhoids, painful defæcation, and fissure of the anus, for its causes favour these conditions. Often the ovaries are tender; and often there are pains in the breasts. The symptoms are aggravated by exertion of any kind. There is almost always dyspareunia.

This disease is almost always associated with neurasthenia. It is the weak nervous system that makes the patient complain so much of the aching uterus.

Diagnosis of chronic metritis.—The diagnostic marks are the size, the tenderness, and the constant aching of the uterus.

To find out whether the uterus is tender, compress the uterine body between the external hand

and the vaginal finger or fingers. If you press hard enough on any part of a sensitive patient you will make her complain. Avoid this error by pressing down with the hand on the abdomen both when the vaginal finger is pressing up the uterine body, and when it is not doing so. If the pain be really from compression of the uterus, you will not get it when you do not apply vaginal counter-pressure, though with the abdominal hand you press just as deeply. If the ovaries or the peritoneum be tender, movement of the uterus will move them and cause pain. Strong compression of the uterus is apt to make the uterus slip away from between the hands, which then come upon the appendages ; and, if these are tender, pain will be caused. Therefore, compress the uterus gently and carefully, and avoid moving it.

Pelvic peritonitis and inflammation of the uterine appendages are excluded by the facts that the uterus is movable and there is no lump or increased resistance behind or on either side of the uterus.

Uterine enlargement from subinvolution is distinguished from that due to fibroid tumours by the fact that the uterus, though large, is normal in shape.

If the patient has gone over her time without seeing anything, it may be, from one examination, impossible to say whether she is pregnant or not. If the patient has gone two months it is easy to form a correct judgment. In pregnancy which has reached this date the body of the uterus is enlarged from before backwards to an extent not found in subinvolution. To diagnose an enlarged uterus is easy ; to judge rightly of its importance is not.

The question in practice.—Some writers have said that chronic metritis is the commonest of female diseases. I think that its frequency has been over-estimated, for two reasons.

(1) Persons unaccustomed to make bimanual

examinations often attribute to chronic metritis pain really due to perimetritis. Gooch fell into this mistake.

(2) In women suffering from neurasthenia the uterus often aches, and is tender. If the neurasthenia can be improved, the uterus ceases to ache.

I have seen, however, cases in which the nervous symptoms had followed the local disease ; in which there was no perimetritis ; in which general treatment combined with local gave relief, which general treatment alone did not do ; in which complete cessation of symptoms followed the menopause ; and in which I therefore think that the uterine condition was a chief factor in the morbid state.

Prognosis.—If the patient has only been ill a few months, you can probably cure her. If the ailment has extended over years it will probably last till the climacteric. When senile atrophy of the uterus has taken place, chronic metritis is cured.

Treatment.—The best cure (short of the menopause) is *pregnancy*, followed by a healthy lying-in. Unfortunately the disease usually makes these patients sterile. After delivery keep the uterus well contracted by the administration of the liquid extract of ergot during the month after delivery. Involution will probably go on well, and complete cure will follow. If the case is recent and the menstrual flow is excessive, a three months' course of ergot will do good.

If menstruation is scanty and painful, and the patient is not anæmic, blood-letting, by putting leeches to the cervix uteri, relieves pain and makes menstruation more copious.

Glycerine is applied by inserting into the vagina pessaries made of glycerine mixed with enough gelatine to make a solid mass. The glycerine causes a

transudation of watery fluid,* and thus unloads the tissues and gives much relief.

Counter - irritation. — Abdominal counter-irritation, if not so violent as to make her sore, will do no harm, and will make her hopeful. Tell her to douche the vagina night and morning with water at a temperature of 110–115° F., using a gallon or more each time. It is best used with a douche-tin, so that the fluid flows by gravity in a continuous stream. The patient should lie on a bed bath. If she has not one of these, tell her to put a macintosh over the side of the bed, folding it so that in its centre there shall be a gutter-like depression guiding the fluid into a vessel beneath. Let the patient lie on this, with her body horizontal, her hips projecting beyond the edge of the bed, her feet resting on two chairs. If the patient suffers from pruritus, tell her to put in the water as much borax as it will dissolve. Such a douche keeps the parts clean ; it makes the uterus contract, thus helping on the circulation through it ; its use is followed by relief to pain.

Internal remedies.—I have seen benefit from chlorate of potash used along with aletris cordial. If your patient is costive, give gentle laxatives. In patients with weak digestion, a little wine with meals may do good. But only prescribe it if there is a clear indication for it, and prescribe the exact quantity that the patient is to take.

Chronic metritis with many symptoms is always associated with neurasthenia. To a robust woman chronic metritis is a trivial malady. If there is neurasthenia the most important part of the treatment is to cure this : by rest, food, and change.

Health resorts.—Residence at certain spas is said to be beneficial in this disease, especially Wood-

* For proof, *see* a paper by the Author, *Obst. Trans.*, vol. xxx.

hall Spa in England and Kreuznach in Germany. The benefit comes from the rest and change and the healthy way of living. The nervous system is invigorated, and so the aching in the uterus is less felt; but no change is produced in the organ itself. A stay at one of these places is a pleasant change to be suggested to patients who have leisure and money—not a unique remedy, to be urged regardless of the patient's circumstances.

Complications of chronic metritis. — There are in many cases in which the uterus is large, aches, and is tender, pelvic adhesions which add to the pain, if they are not wholly responsible for it. When involution is imperfect, the uterus is more liable to chronic degenerative changes and inflammation. Hence adenomatous growths, with endometritis, are often present with chronic metritis. There is generally leucorrhœa with chronic metritis from subinvolution of the vagina.

CHAPTER X

UTERINE DISPLACEMENTS

I.—PROLAPSE

So-called minor displacements.—The minor so-called displacements are anteflexion, ante-version, lateriversion, retroflexion, retroversion, and prolapse. The first three of these are not morbid conditions.

Lateriversion is either normal (for the uterus, like the vomer, is seldom exactly in the middle) or results from the uterus being pulled aside by adhesions, or pushed aside by a swelling. The condition which produces lateriversion may be important, but the unusual place of the uterus is not. **Anteflexion** is the natural shape of the uterus in most virgins. **Anteversion** is the usual position of the uterus when the bladder is empty. **Prolapse.**—Prolapse causes pain, but does not endanger life. It is important because it is so common. In retroversion and retroflexion, the displacement is important because it may bring about changes in the circulation through the uterus.

The pathology of prolapse.—The essential condition in prolapse is yielding and stretching of the pelvic floor. The uterus rests on the pelvic floor (Fig. 15), and sinks when this yields. The muscles and fasciæ, when overstretched, ache ; hence the pain. The causes of the yielding are four—weakness, injury, overstretching, congenital defect.

1. **Weakness:** that is, lowered muscular and

nervous tone. Overstrain from long hours of work, from frequently repeated childbearing, from too prolonged lactation, or from anxiety or unhappiness. The slighter forms of prolapse often go with neurasthenia.

2. **Injury in childbirth.**—This injury may be either overstretching or tearing of the parts. It is certain that complete rupture of the perineum may exist unrepaired for years without prolapse. The way in which childbearing favours prolapse is by
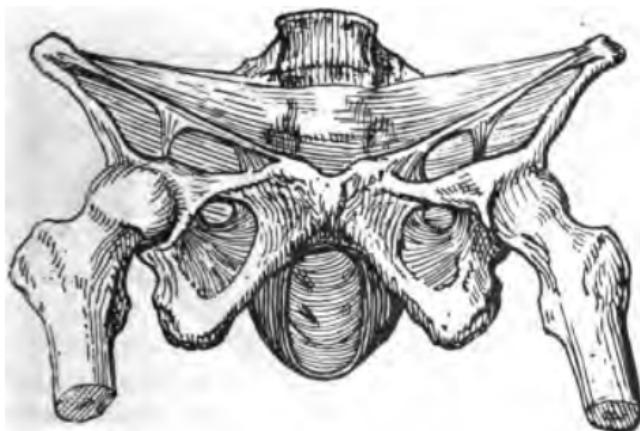
Fig. 13.—Levator ani. (*After Buckmaster.*)

causing injury to those structures in the pelvic floor which are the main supports of the uterus—viz., the pelvic fascia and the levator ani muscle (Figs. 13, 14). But no dissection has been made to show the existence or the precise extent of such tears.

3. **Sudden stretching.** — During violent exertion or in a fit, the uterus has been suddenly forced outside the vulva, even in a virgin. Want of proper treatment may lead to the descent becoming permanent.

4. **Congenital anatomical peculiarities.** —Just as the formation of herniæ is favoured by

anatomical peculiarities in the individual, so may that of prolapse. I have seen, in otherwise healthy young virgins, who had never followed any laborious occupation, the vagina inverted and the whole uterus outside the vulva. Such a condition can only be explained by a congenital peculiarity.

Pathological relationships. — In their pathology displacements resemble flat-foot, lateral curvature of the spine, and knock-knee. In all these diseases there is yielding of muscular and fibrous structures. The slighter forms depend on debility,

Fig. 14.—Levator ani. (*After Buckmaster.*)

and improve as the health improves. In the greater forms the changes are too considerable to be altered by merely improving the general health. In all, the suffering of the patient depends not upon the amount of local change, but on the state of her health.

The higher degrees of prolapse are like herniæ. In the one the uterus protrudes, in the other the bowel. In a child the hernial orifice may close if a truss is worn long enough. In the slighter forms of uterine descent, if the uterus is supported until the pelvic floor has regained its tone, the patient may be able then to discontinue treatment. But as a large

hernia is attended with permanent change at the spot of protrusion, so the changes in the pelvic floor which go with great prolapse are permanent.

The points in which the parallel between uterine displacements and herniæ does not hold good are (1) the production of displacements by mere functional weakness, and (2) their association with nervous symptoms also produced by functional weakness.

Symptoms.—In great prolapse the patient tells you that her womb is down. In the slighter forms she only complains of pain. Prolapse causes aching, dragging, bearing-down pain, felt in the lower part of the abdomen and back and down the thighs, especially the left thigh; worse during menstruation; made worse by defæcation, because the straining forces the womb down. The bladder is irritated, and therefore the patient has to pass urine with annoying frequency. The characteristic feature of the pain is that it ceases when the patient lies down. If it does not do so the patient's troubles are not entirely due to prolapse.

The association of nervous symptoms with minor displacements. — The slighter degrees of prolapse are often associated with neurasthenia, loss of flesh, and atonic dyspepsia; loss of appetite, discomfort after food, flatulence, constipation. When the patient walks her pain is worse; Graily Hewitt called this *uterine dyskinesia.*

The symptoms of neurasthenia are so often associated with minor displacements of the uterus that they have been described as reflex symptoms produced by displacement. They occur with *minor* displacements for these reasons : (*a*) muscular weakness is a cause of slight, not of great prolapse ; (*b*) a patient with neurasthenia will feel pain from a degree of prolapse which would not trouble a strong woman ; (*c*) prolapse usually begins between the ages of

D

twenty-five and thirty-five, when women are having
children quickly, and when they suffer most from the
strain of pregnancy, labour, lactation, and the care
of young children. By the time prolapse has become
great the patient has generally ceased childbearing,
and her children are old enough to give little trouble ;
hence nervous exhaustion is less frequent in such
patients.

The diagnosis of the slighter forms.—
Take the slightest form. A patient has only recently
begun to suffer from occasional bearing-down pain,
always relieved by lying down. If she has no other
symptoms, you may infer the cause of the pain from
its characters. It varies with the patient's health
—worse if this is from any other cause depressed,
better when this is good. If she is suckling, let her
wean the baby. If she sleeps badly, send her to bed
early and see that her night's rest is undisturbed.
Give her tonic medicine, and order change of air, if
possible, to a bracing place. Such treatment will
remove the symptoms.

Physical examination.— If the symptoms
are not occasional only, but constant, probably
mechanical support will be needed. You cannot judge
as to this without examining.

Palpate the abdomen, and you will find it non-
resistent. With gradual firm pressure you can press
down into the pelvic brim and into the loin, and
make sure that there is no tumour nor tenderness.

On vaginal examination the uterus is movable.
There is no undue fulness or resistance ; nor is
there tenderness. This excludes pelvic inflam-
mation.

Physiological descent (Fig. 15).—A certain
amount of descent is physiological. With respiration
there is a slight ascent and descent of the pelvic floor,
and during muscular effort a more considerable

descent. The amount of this descent is different in different persons. In prolapse this physiological yielding is increased. The average increase, under strain, in the projection of the pelvic floor—that is, the measurement of the pelvic floor over the soft parts, from a point low down on the sacrum, or on the coccyx, to the symphysis pubis—is about an inch and a quarter.

With this descent of the pelvic floor there goes descent of the uterus and shortening of the vagina.

The average descent during straining of the anterior vaginal cul-de-sac is about an inch, that of the posterior cul-de-sac rather less. The uterus as it descends moves in the axis of the pelvis—that is, roughly speaking, in a curve having a centre in or near the symphysis pubis—and by a movement of this kind the posterior cul-de-sac is more shortened than the anterior. This is what takes place in the nullipara. Prolapse is more frequent among the parous, and in prolapse the anterior vaginal wall is the part which commonly comes down first.*

Prolapse of the pelvic floor without relative displacement of the uterus (Fig. 16).—The slightest form of prolapse consists simply in exaggeration of the descent of the uterus and pelvic floor, which takes place in every woman during effort.

The perineum ought not to descend more than about half an inch when the patient strains. In some cases it bulges down to the extent of two inches or more. Such descent as this is usually accompanied with painful sensations. Cases of this kind are more frequent within a few months after parturition, because such yielding of the pelvic floor tends to become in time complicated with prolapse of the vagina

* For evidence of these statements *see* papers by the Author, *Obst. Trans.*, vol. xxxi.

and uterus. It is met with, although not often, in nulliparæ. The symptoms vary with the general
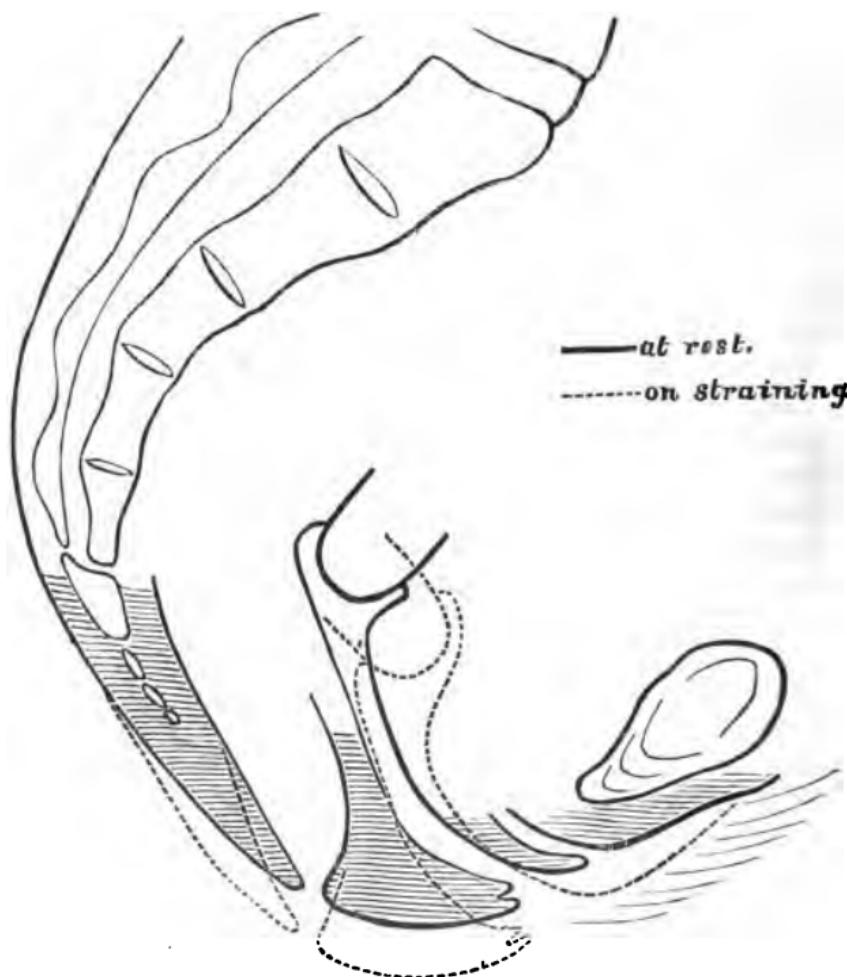
Fig. 15.—Diagram showing normal descent of pelvic floor, descent of uterus, and shortening of vagina during effort. (*Drawn from measurements of a nullipara, aged* 19, *suffering from a small tumour.*)

health, being absent when this is better than usual.
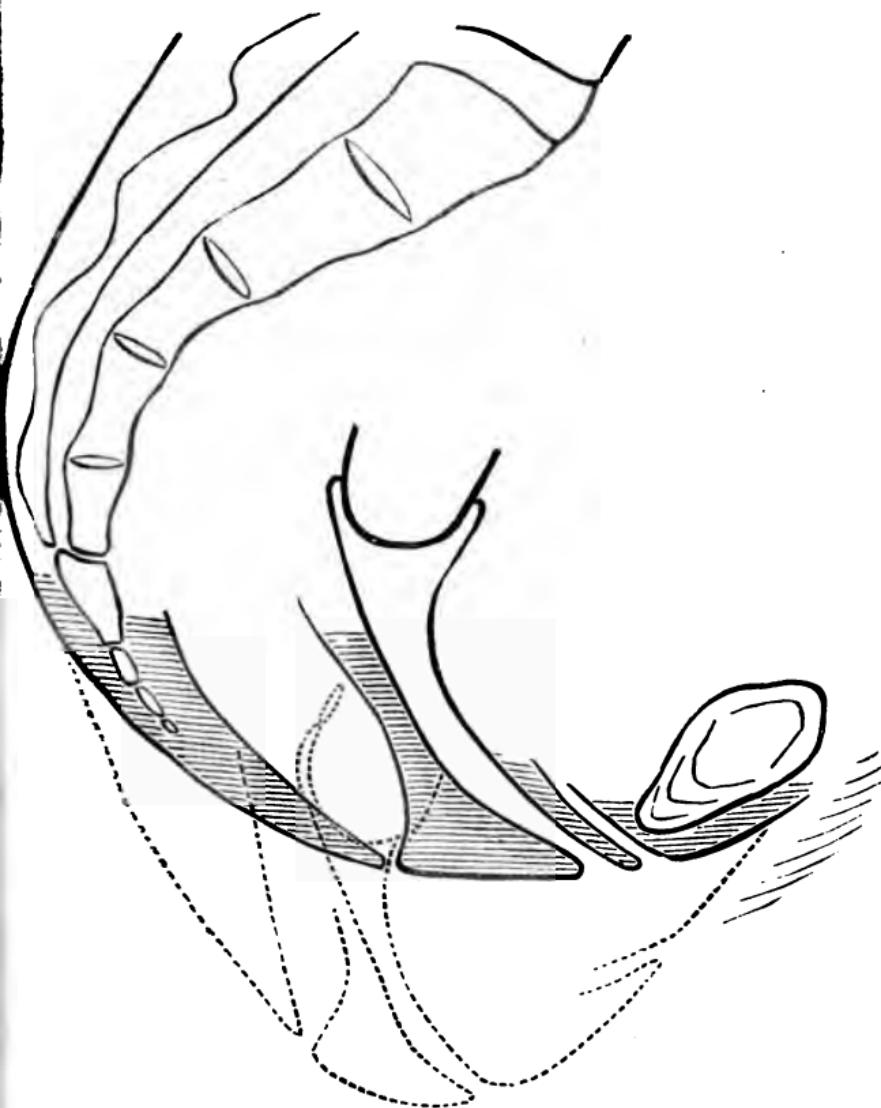
Fig. 16.—Diagram showing descent of the pelvic floor without relative displacement of uterus. (*Drawn from measurements.*)

The symptoms are aching, dragging sensations, felt in the back and lower abdomen and down the thighs.

Like many other pains,* it is often worse on the left side, mainly because the left side is weaker in resisting painful impressions, as well as weaker in motor power, than the right. The pain is removed by lying down. If the pain be not removed by lying down, no mechanical treatment will be enough to cure it. It is made worse by walking and by defæcation. Constipation implies scybala, which require straining to expel them, and such straining helps to weaken the pelvic floor. There is often irritability of the bladder. Leucorrhœa is often present. The symptoms are usually increased before and during menstruation.

Treatment.—These symptoms can be relieved by support to the perineum. The readiest way of giving this support is by an ordinary napkin, very tightly fastened, or an abdominal belt with a perineal pad.

In these cases we have the phenomena of prolapse in their slightest and simplest form. The test, whether symptoms be due to alterations in the position of the pelvic organs, is that they should be relieved by correcting the anomaly which is assumed to be their cause. In these cases this can be done, and when it is done the symptoms are at once and completely relieved.

The mechanism of uterine prolapse.— If the condition goes further, either (1) the uterus sinks into the vagina, inverting the upper part of that canal ; or (2) the anterior vaginal wall sinks down, and pulls the uterus after it.

Prolapse of the vagina.—In most cases the anterior vaginal wall first comes down, bringing the bladder with it. This is called *cystocele* (κύστις, the

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* *See* Champneys, " On the Pain of Pelvic Cancer," *Obst. Trans.*, vol. xxii., p. 10. *See also* a paper by the Author, " On the Frequency of Local Symptoms in Displacement of the Uterus," *Obst. Trans.*, vol. xxxv.

bladder ; κήλη, a tumour). In some few cases the
posterior vaginal wall protrudes first and most, and
is bulged forwards and downwards by the anterior
wall of the rectum, which protrudes into it. This
is called *rectocele* (Fig. 17). The usual order of events
is first cystocele, then prolapse of the uterus, then

Fig. 17.—Cystocele and rectocele.

rectocele. Rectocele is not common, and as the first
and sole kind of prolapse it is rare. It is also rare
to get more than a slight degree of prolapse without
cystocele. There is a specimen in the London Hos-
pital Museum (No. 2,130) in which the uterus is
dragged down without the bladder by a large pedun-
culated tumour attached to the cervix—an exceptional
condition (Fig. 18).
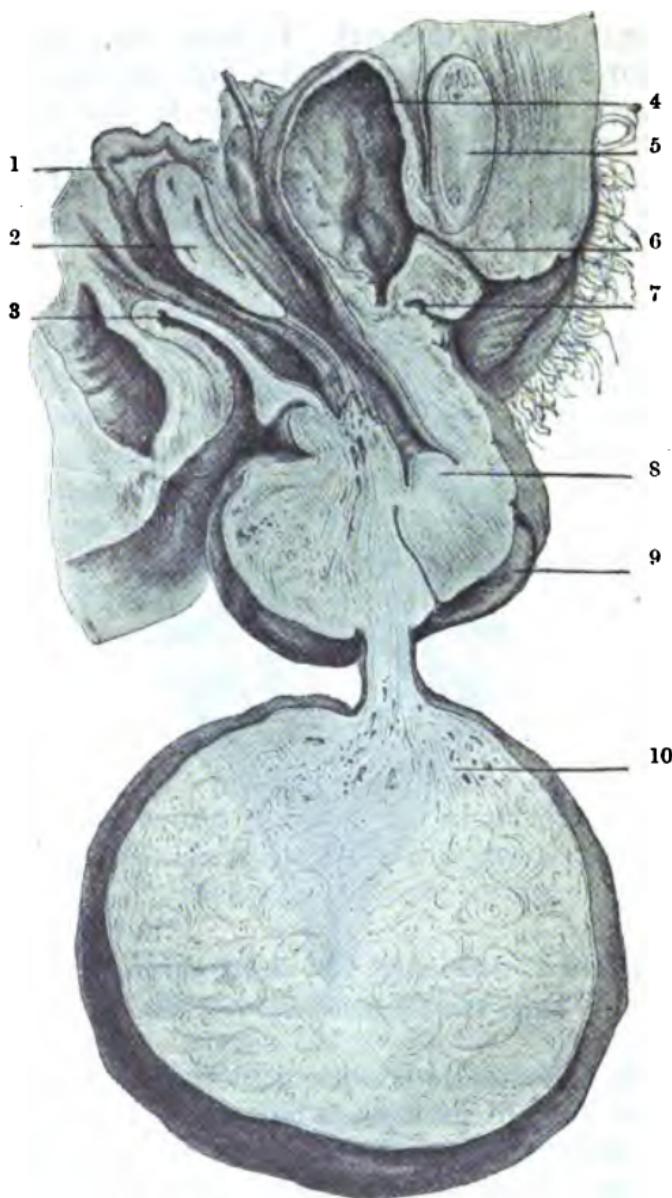
Fig. 18.—Uterus dragged down by a tumour. (*From a specimen
in the London Hospital Museum.*)

1. Fallopian tube ; 2, ovary ; 3, rectum ; 4, bladder ; 5, symphysis pubis ;
   6, urethra ; 7, anterior vaginal fornix ; 8, body of uterus ; 9, vagina ;
   10, fibroid-tumour of cervix uteri.

The diagnosis of cystocele. — You see a convex protrusion between the labia, covered with rugous vaginal mucous membrane, and easily pushed back. In front of it is the meatus urinarius, and carrying your finger backwards and upwards along the surface of the protrusion, you come, within the vagina, to the cervix uteri. When you pass a sound into the urethra with the concavity backwards, you find it enters the swelling, and its point can be felt just under the mucous membrane of the protruded mass. This shows that the protrusion contains the
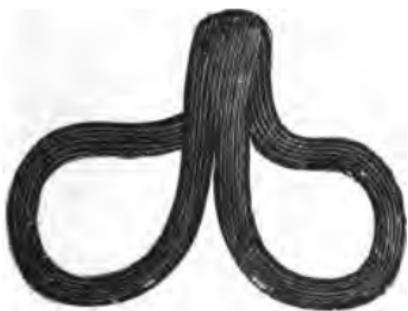
Fig. 19.—Hewitt's cradle pessary.

bladder. The only thing with which a cystocele might be confused is a tumour in the anterior vaginal wall. In any such condition the sound in the urethra would not pass backwards into the tumour.

Treatment of cystocele.—In slight cystocele, Graily Hewitt's cradle pessary is the best instrument (Fig. 19). The cradle lifts up the base of the bladder. The pessary rests on the posterior vaginal wall. Its posterior ring should surround the cervix. It is held in place by the embrace of the vaginal wall. The objection to the cradle pessary is that it blocks up the vagina, and may prevent sexual intercourse. This objection can be obviated by teaching the patient to take out and replace the instrument herself.

D*
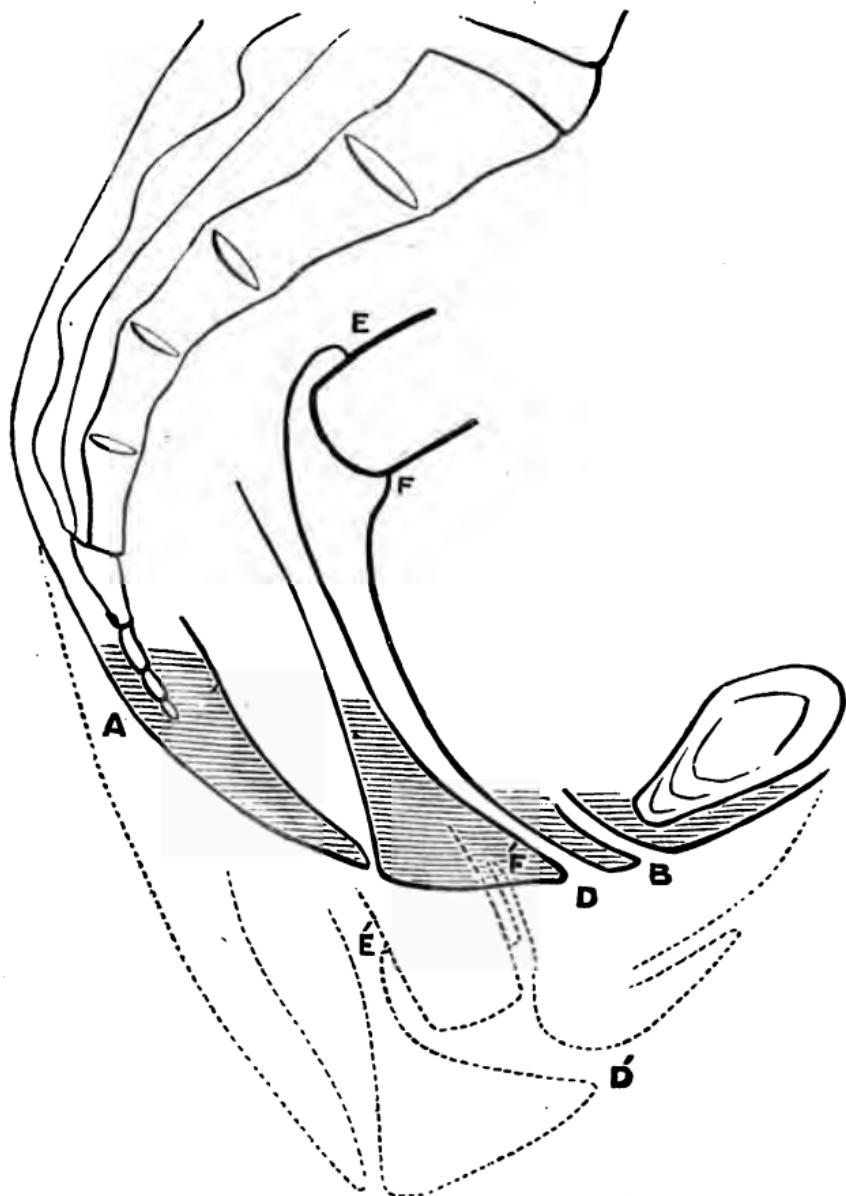
Fig. 20.—Descent of pelvic floor with slight (first degree of) prolapse. (*From measurements.*)

A, coccyx ; **D D'**, fourchette ; **E E'**, posterior vaginal fornix ;
F F,' anterior vaginal fornix ; **B**, urethra.
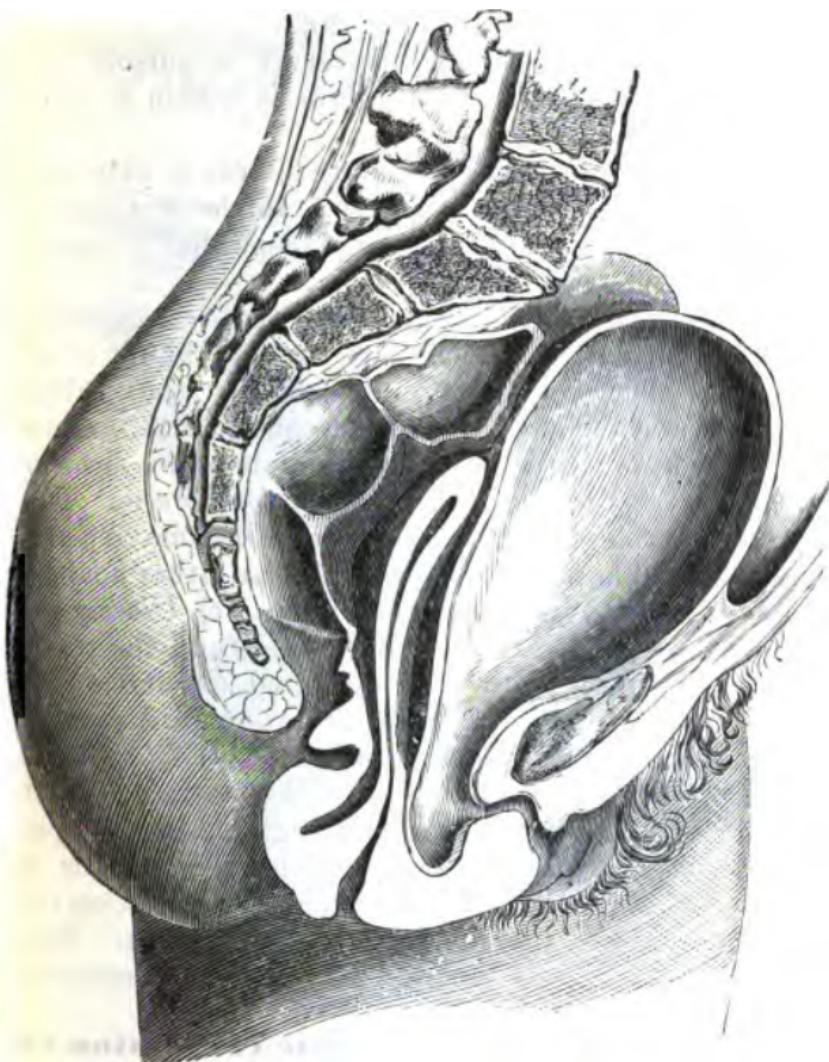
Fig. 21.—Showing second degree of prolapse; elongation of cervix and body of uterus; swelling of part outside vulva; cystocele (*R. Barnes*). (*From a specimen in the Museum of St. Thomas's Hospital.*)

Prolapse of the uterus.—Prolapse of the uterus is divided into three degrees :—

The first, in which the cervix uteri comes down, but not beyond the vulva (Fig. 20).

The second, in which the cervix is outside the vulva, but the body of the uterus is within it (Fig. 21).

The third, in which the whole uterus is external.

This division is not arbitrary. In the *first* degree the uterus is generally healthy, except that it comes lower than it ought to.

Elongation of cervix.—In the *second* stage four other morbid changes are brought about : (*a*) *Œdema.* The cervix is embraced by the vulval orifice ; and the effect of this is to obstruct the return of blood from the part outside, which becomes swollen (Fig. 22). (*b*) *Change in the mucous membrane.* The exposed surfaces of vagina and cervix become dry and scaly, more like a patch of psoriasis than either healthy skin or healthy mucous membrane. (*c*) *Ulceration.* The exposed part is subject to friction ; and the result of this, together with the obstructed circulation, is ulceration. Sometimes these ulcerations are covered with a diphtheritic-looking pellicle. (*d*) *Elongation.* There is yet another change to be noticed. Most cases of prolapse of the uterus begin with prolapse of the vagina. The traction on the cervix pulls it from the body, and lengthens the part of the cervix which is above the insertion of the vagina. This may be so stretched that the uterine cavity comes to measure five inches long.

Pathology of hypertrophic elongation of the cervix.—The reasons for thinking it due to stretching are, first, that if you grasp the cervix at the part within the vulva you will find that it is thin ; second, and chiefly, that when prolapse becomes complete the uterus returns to its natural length. But the elongation is not always due solely to stretching. There is a specimen in the Museum

of the Royal College of Surgeons in which there is
elongation of the infravaginal portion of the anterior
cervical wall, and of the supravaginal portion of the
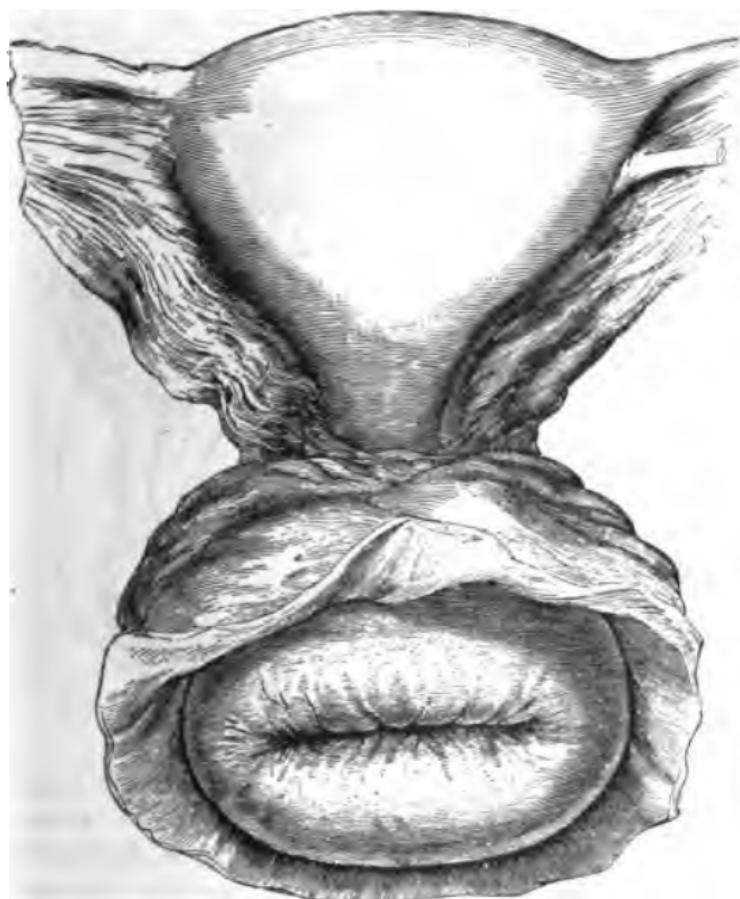
Fig. 22.—Second degree of prolapse, with elongation of cervix
and great swelling of part outside vulva (*R. Barnes*).
(*From a specimen in the Museum of King's College Hospital,
No.* 9,902.)

posterior cervical wall; and no thinning at all (Fig.
23). Here the change is hypertrophy. I suspect it
to have been congenital, and unusual in the low

attachment of the vagina behind. The elongation
is not limited to the cervix; it affects the body of
the uterus also.

Complete procidentia.—In the *third* stage,
in which the whole uterus is outside, the conditions

Fig. 23. — Elongation of infravaginal portion of anterior
    wall of cervix, and of supravaginal portion of posterior
    wall. (*From a specimen in the Museum of the Royal College
    of Surgeons.*)

are altered. The inverted vagina forms a bag
hanging from the vulva, at the bottom of which
lies the uterus, usually retroverted, *i.e.,* horizontal,
the cervix in front, the body behind (Fig. 24). I
have twice seen it anteverted, but much oftener retro-
verted. There is now no longer pulling of the cervix
from the fundus, and therefore the uterus becomes

again its normal length. The cervix is no longer
constricted by being encircled by the vulva, and
therefore the swelling of the cervix, which was the
result of the constriction, disappears. The ulcera-
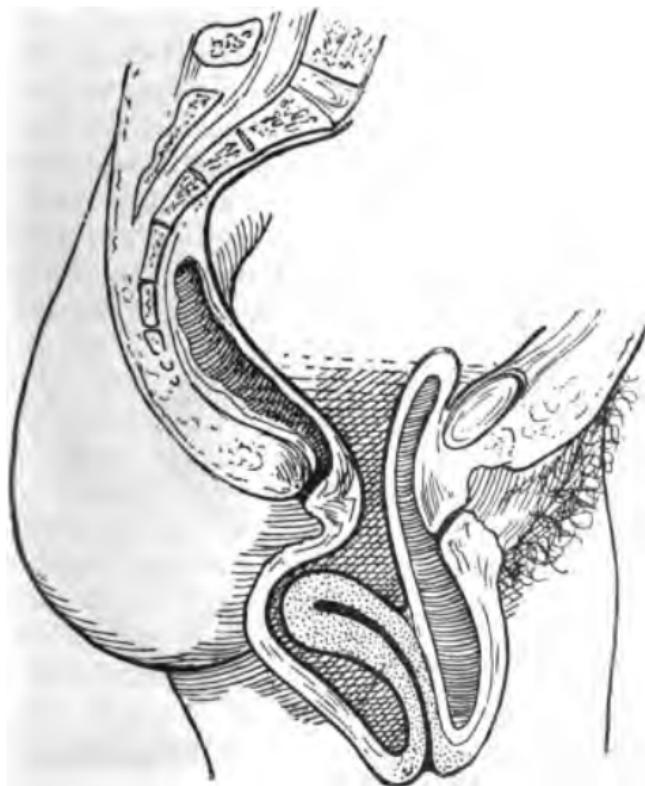
Fig. 24.—Diagram showing final stage of prolapse; vagina
turned inside out, forming a bag, at the bottom of which
lies the uterus retroverted.

tion and the dry scaly condition of the vaginal and
cervical mucous membrane are the same.

Diagnosis.—*Uterine prolapse of the first degree*
is recognised by the descent of the cervix when the
patient strains, and the absence of enlargement of
the uterus.

Uterine prolapse of the *second* degree, with elonga-
tion of the cervix, has to be distinguished from hyper-
trophy of the infravaginal portion of the cervix.
This is a congenital malformation occasionally met
with in virgins. It generally causes slight descent.

Fig. 25.—Hypertrophy of infravaginal cervix. Note that when
    pushed up as far as possible the vaginal portion still occupies
    the vagina.

Push back the protruded cervix as far as possible.
In prolapse with elongation the cervix can be pushed
back and up until not more than half an inch of its
length protrudes into the vagina. In hypertrophy
of the infravaginal cervix, however high the cervix
is pushed up, the columnar vaginal portion remains

jutting downwards into the vagina for a length of one to two inches or more (Fig. 25).

Uterine prolapse of the *third* degree can scarcely be taken for anything else. There is a bag hanging from the vulva covered with dry scaly mucous membrane. The finger passed round the neck of this tumour finds that its covering is continuous with the vaginal or vulval mucous membrane, and that the vaginal cul-de-sacs are shortened or obliterated. At the bottom of the bag is the os uteri, and on taking the tumour between your thumb and finger near this opening you will feel the neck and body of the uterus lying at the bottom of the bag.

The only thing which could be taken for prolapse would be a tumour, protruding from the vagina. But the presence of the os uteri at the bottom of the mass, and the uterus felt within it, make its nature clear.

A *rectocele* forms a tumour protruding on straining, reducible when the patient is lying down, covered with mucous membrane continuous behind with that of the vulva, above with that of the vagina and cervix uteri. If you put your finger in the rectum you will find that a pouch of the anterior wall of the gut descends into the protruded vaginal wall.

A protrusion of the posterior vaginal wall may contain a hernia; the finger in the rectum will find that the anterior wall of the bowel remains unaltered when the vaginal wall protrudes; and on manipulation of the protrusion the bowel within it can be felt, and when the bowel slips down or is pressed back, there will be a gurgle.

These are the varieties of prolapse. Their symptoms are alike, with the addition that in cystocele sometimes the patient may tell you that she cannot pass her water till she has pressed the tumour up. And in rectocele, fæces often lodge in

the protruded pouch, causing some difficulty in their expulsion.

The severity of the symptoms depends more on the patient's nervous system than on the amount of the prolapse. A sensitive patient will complain much from slight local changes, especially if she be inclined to dread future ill consequences; while to a robust patient rightly informed of the nature of her ailment, prolapse is a trifle.

Treatment of prolapse.—The treatment of prolapse is of two kinds: (1) mechanical, (2) surgical.

Mechanical treatment. — The mechanical treatment consists in support by a pessary. Pessaries are of two kinds: (*a*) vaginal, (*b*) pessaries with outside straps. The mechanical treatment of prolapse is palliative, not curative. In all but the very slightest cases the prolapse recurs when the pessary is left off.

Vaginal pessaries: their mechanical action.—The best vaginal pessaries are: (1) the ring, (2) the Hodge. Their use is to keep the vagina extended. They do not press up the uterus; if acting well, the pessary does not touch the uterus. The pessary is held in place by the pressure upon it of the vaginal walls.

The ring pessary.—This is made of watchspring covered with indiarubber, and is the most generally useful vaginal pessary. Its advantages are its softness; its thickness, by which its pressure is diffused; whilst its diameter can be lessened by compression, so that its introduction is less painful than that of a rigid instrument.

Hodge's pessary. — This is essentially an oblong frame to extend the vagina. The original instrument, looked at from the side, was sigmoid, corresponding in shape to the curve of the vagina (Fig. 26). The best shape for prolapse is one which,

looked at from the side, is concave upwards (Fig. 27).
When thus shaped its anterior end lies behind the
upper part of the pubic arch; during effort the
anterior end is pressed against the pubic bones, and

Fig. 26.—Hodge's pessary.

thus the pessary is prevented from coming out.
Whether it is thus retained or not depends upon the
nearness of the perineum to the pubic arch. If it be
close to the pubic arch (Fig. 28), then a vaginal pessary
shaped as described will be well retained. If it be
far from the pubic arch, the pessary will be retained

Fig. 27.—Modification of Hodge's pessary advised
by author.

solely by the pressure of the vaginal wall, and will
be expelled during any unusual effort.

These pessaries are made of various materials
—celluloid; vulcanite; pewter, which is easily bent;

aluminium, the lightest and cleanest, which cannot
be bent at all (except in the workshop).   None of these
can be lessened in size during introduction, and there-
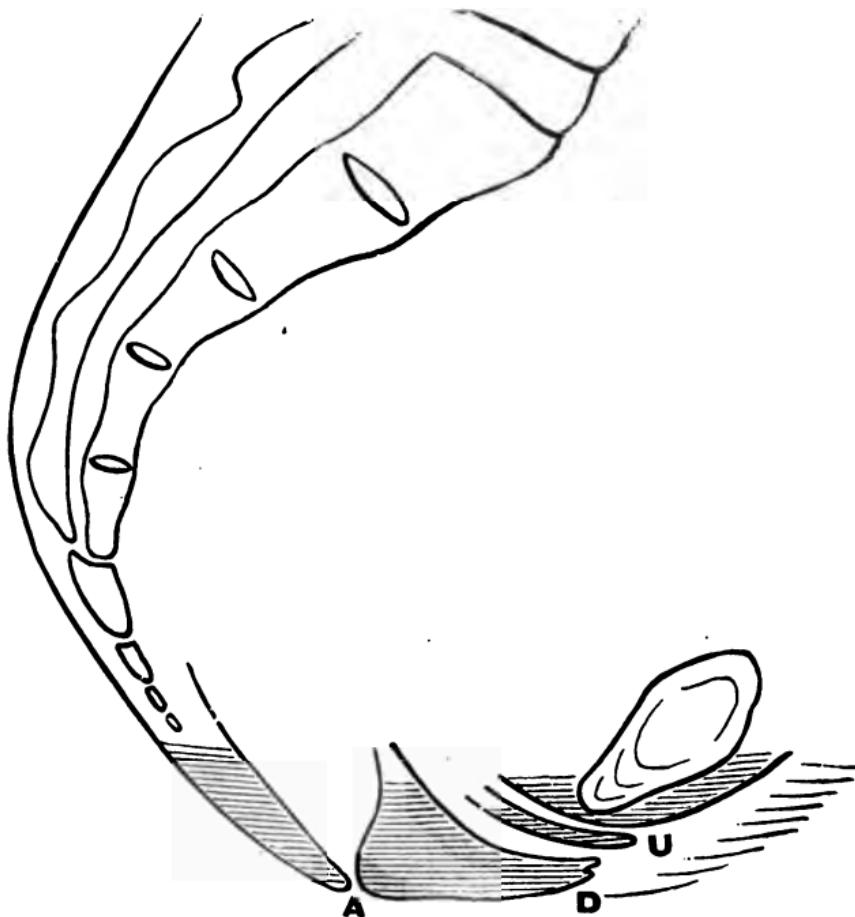
Fig. 28.—Occasional conformation of parts at vaginal orifice.
Perineum extending forwards to symphysis.
A, anus ; **D**, fourchette ; **U**, urethra.

fore their application is painful.   Greenhalgh's pes-
sary is of wire covered with indiarubber, the anterior
end being of indiarubber alone.   Hence the sides
can be pressed together and the instrument inserted
with less pain.   The drawback to this is that india-

rubber forms, with the vaginal secretions, an offensive compound, and in some patients it is so offensive and irritating that they cannot tolerate any
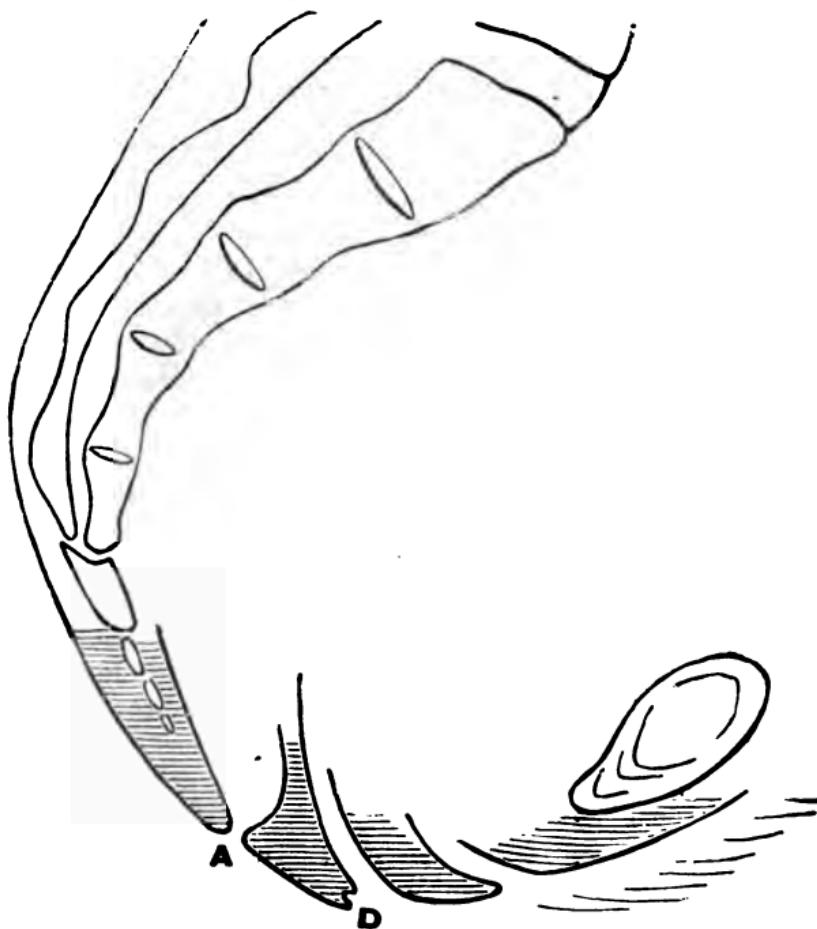
Fig. 29.—Occasional conformation of parts at vaginal orifice. Fourchette two inches behind symphysis.

A, anus ; **D**, fourchette.

indiarubber instrument. In some patients a pewter instrument causes irritation. Vulcanite and celluloid are clean, but are sometimes eroded by the vaginal secretions.

Effects of a vaginal pessary.—If a vaginal

pessary is retained and keeps up the uterus, relief is almost complete. The drawback is the attention required so long as the patient is wearing the instrument. If it is too small, the relief given will be less complete. If too large, the vagina will feel tense and the pessary will cause pain. The introduction of a pessary always causes slight pain ; but when this has passed off, the patient ought not to be able to tell whether a pessary is there or not. If she is aware of its presence, it is probably too large. Ulceration, perforation of bladder, rectum, Douglas's pouch, ureters, and evils consequent upon these injuries, have occurred from careless treatment with pessaries. Such things seldom result from Hodge's pessary, but there is no form of pessary with which they are impossible.*

To prevent such accidents while a patient is wearing a pessary, the vagina should be daily washed out with clean water, to which an astringent may be added if there be leucorrhœa, borax if there be any irritation, permanganate of potash if there be fœtor. The pessary should be removed and cleansed, and the vagina examined, to see that there are no ill-effects, every three months. With these precautions a vaginal pessary may be worn for an indefinite time.

Pessaries with outside straps. — If no vaginal pessary will stay in, the only mechanical treatment possible is a pessary supported from outside. There are two forms—the " cup and stem " and Cutter's pessary.

The cup and stem pessary (Fig. 30).—All varieties of this consist in a narrow column, supported by straps at the base, and having an expanded head, which forms a platform on which the uterus rests. The straps are attached to a waist-belt. Some are

* *See* Neugebauer, *Arch. für Gyn.*, Bd. xliii.

made of gutta-percha, which is cheap, but stinks.
Vulcanite is better. Earthenware is clean, but

Fig. 30.—Cup and stem pessary, as made of gutta-percha.

heavy; being hard, if it is a little too long it will
hurt the patient when she sits down
(Fig. 31). If too short, the vagina
will come down by the side of it or
the pessary be expelled. Therefore
be particular that the pessary is the
right length. The tapes which sup-
port the pessary should be so fast-
ened that the patient herself can
easily take them off and replace
them by clean ones. The waist-belt
should also be so made that the
patient can herself make any needful
alteration. Instruct the patient to
take out the pessary every night and

Fig. 31.—Aitken's
porcelain stem.

replace it before rising in the morning, and to change the tapes when they are dirty.

Hughes-Davies's pessary. — Dr. Hughes-Davies has hit upon the idea of mounting a Hodge's pessary upon a stem, which is supported by straps

KROHNE & SESEMANN.
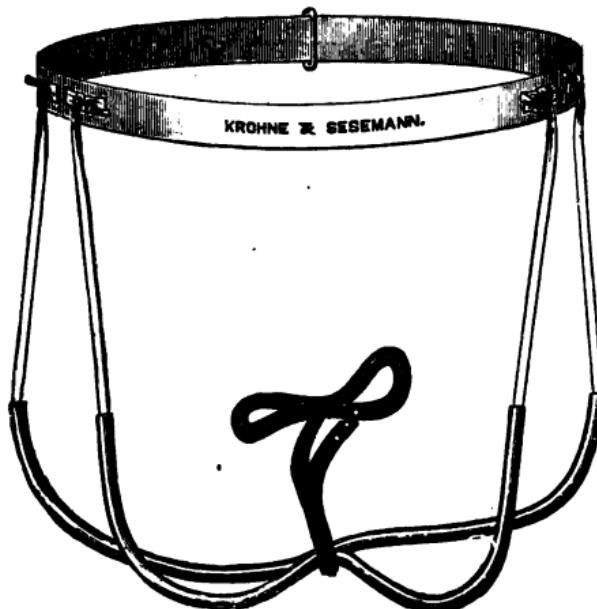
Fig. 32.—Hughes-Davies's pessary.

attached to a waist-belt. In some cases this is more effective than a simple cup (Fig. 32).

Cutter's pessary.—This has a crescentic bar, a cup, or a loop (Fig. 33) mounted on a stem having a perineal curve ; from this a piece of indiarubber tubing passes back between the nates, and is connected with a waist-belt. The bar or loop should go into the posterior vaginal fornix. It thus raises the uterus higher than the cup and stem does. The objections to it are that it is more difficult for the patient herself to adjust, for the top of the instrument

tends to get in front of the uterus ; and that the indiarubber band going between the nates gets dirty.

By one of these instruments much relief can be given to every case of prolapse. But a little discomfort yet remains, and some patients are willing to submit to a surgical operation if they can by it

Fig. 33.—Cutter's pessary, with loop.

be freed from the necessity for employing such an instrument.

Surgical treatment of prolapse. — Four operations have been practised and are recommended for the cure of this condition :

    1. Colporrhaphy.
    2. Alexander's operation.
    3. Ventral fixation of the uterus.
    4. Removal of part or the whole of the uterus.

1. **Colporrhaphy** (κόλπος, " the vagina," ῥαφή, " a seam ") denotes a plastic operation for narrowing the vagina. Anterior or posterior colporrhaphy is spoken of according to whether the operation is done on the anterior or posterior vaginal wall.

Anterior colporrhaphy. — Anterior colporrhaphy consists in dissecting a piece of mucous membrane off the anterior vaginal wall, and bringing together with stitches the sides of the denuded surface. The larger the piece removed, the greater the ultimate effect, but the less likely is primary union to take place. The shape matters not so long as the piece removed is large. The best shape is oval, with the long axis parallel to that of the vagina, for you want to narrow, not to shorten, the vagina. Stitch from side to side. I prefer fine catgut for the stitches, for you can leave them to be absorbed. Some operators, instead of removing a large piece, have denuded strips of mucous membrane on opposite sides of the vagina, and brought them together so as to enclose a pouch, or form a shelf. These operations, if successfully done, shut off spaces in which secretions may accumulate.

Mode of operation.—You need the following instruments :—

> Clover's crutch.
> Volsella.
> Toothed dissecting forceps.
> Four pressure forceps.
> Scalpel.
> Half-curved needles and needle-holder.
> No. 1 catgut.
> Sponges, sponge-holders, douche, etc.

Put the patient in the lithotomy position. Have the cervix held down as far as possible with the volsella, so as to extend the anterior vaginal wall. Mark out with the scalpel the outline of the oval piece of mucous membrane you intend to remove. Then dissect it off. A few small vessels may spout, but they can be closed by torsion, or by the pressure of the stitches. Unite the sides by stitches passed from

side to side (Fig. 34). Take care that each stitch
enters and emerges through the mucous membrane
so close to the denuded surface that, when tied, no
mucous membrane may be tucked in, and that each
stitch takes up a good bundle of raw fibro-cellular
tissue. If the stitching is neatly done, you should
get union over a large part of the line of incision. If
no union takes place, but the whole wound heals by
granulation, the effect is much the same.
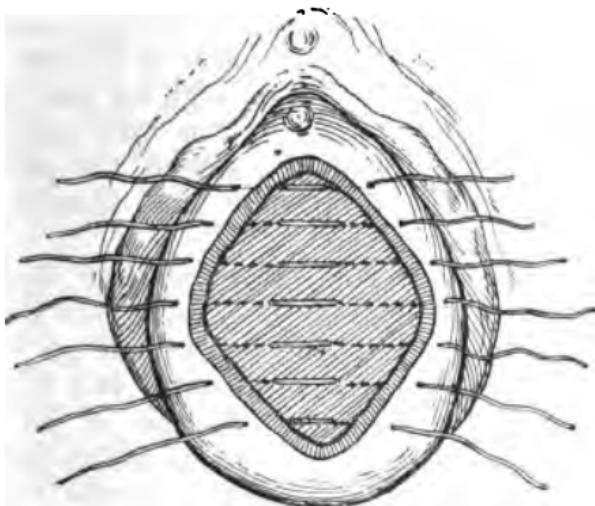
Fig. 34.—Anterior colporrhaphy.

Effect of anterior colporrhaphy. — This
operation diminishes the volume of the anterior
vaginal wall which comes down, though it affects not
the fact of descent. But alone it does no permanent
good in cystocele. After the patient has been up
and about a few weeks the bladder comes down ;
the dragging pain and the bladder irritation become
the same ; and the only difference between the
patient's condition before and after the operation is
that the protrusion is not quite so big—an unimportant
gain.

Posterior colporrhaphy.—This means narrowing the posterior vaginal wall and extending the perineum forwards. It differs from the operation for incomplete rupture of the perineum in that in doing the latter operation it is desirable to remove no skin or mucous membrane, but to make a raw surface by splitting, so that in the event of the patient having more children, the new perineum may not oppose resistance to delivery. Posterior colporrhaphy for prolapse should only be done in women who have finished childbearing, and the raw surface should be made by dissecting off a large piece of mucous membrane, carrying the denudation high up and far forwards. The larger the piece you take away, the better the result, unless you extend the perineum so far forwards as to interfere with natural functions.

Different ways of doing this operation consist in the shape of the piece removed. Some have denuded a triangular piece with the point high up on the median raphe. Others have denuded two triangles, one in each of the hollows at the side of the raphe. The shape of the denuded area is unimportant in comparison with its size. As long as the raw surfaces are brought together, it matters little how the stitches run. Fine catgut, which you need not take out, is the best suture material, but if there is any strain on the stitches, fine catgut is not strong enough. For those stitches on which strain is thrown I prefer silkworm gut.

How to do the operation.—The following instruments are needed :—

> Clover's crutch.
> Duck-bill speculum.
> Scalpel. Scissors.
> Toothed dissecting forceps. Six pressure forceps.

Large curved perineum needle in handle.

No. 1 catgut. Silkworm gut.

Razor, sponges, T bandage, iodoform, etc.

The patient should have had the bowels cleared out by an aperient the evening before, and an enema on the morning of the operation day. The bladder should be empty. Put the patient in the lithotomy position. If there is much hair on the labia, shave them. Let an assistant hold the anterior vaginal wall up with a duck-bill speculum. With the scalpel mark out the surface you intend to denude. Put a temporary stitch, leaving the ends long, in the middle of the vagina at the point up to which you intend to denude the surface. By this you can have the parts held tense while you denude. Cut along the posterior boundary of the vulva, ending for-

Fig. 35.—Posterior colporrhaphy.

wards about half an inch behind the meatus urinarius. From this point carry the incision up in a curve, the apex of which is on the median raphe an inch and a half or two inches above the vulva (Fig. 35). With the finger, aided by scalpel or scissors, strip off the mucous membrane over the area mapped out; secure with forceps arteries that spout. The denudation finished, stitch the raw surfaces together. The essential thing is to enter and bring out the stitches through the mucous membrane so close to the raw surface that, when tied, no mucous membrane is folded in. The only stitches upon which strain is thrown are some of the lower ones; catgut may be
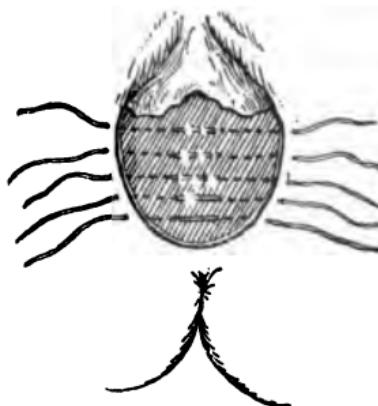
safely used for the higher stitches. After sewing up the wound apply a pad of Gamgee tissue or iodoform gauze, and keep it in place with a **T** bandage.

The great thing is to make the raw surface big enough. The bigger it is, the easier it is to bring the raw surfaces into contact by sutures, and the more the vagina will be contracted when healing is complete. If the stitching is perfect, quick union takes place. If imperfect, there is slow healing of the rest of the raw surface by granulation, and slower convalescence; but the effect upon the prolapse is the same.

Effect of colporrhaphy.—The best result that colporrhaphy will give is gained by combining anterior with posterior colporrhaphy. It narrows the lower part of the vagina so as to oppose the escape of the procident mass, and enables the vagina to retain a pessary. The more the vagina is narrowed. the greater the effect. If no pessary is put in, the uterus may keep up for a time; but sooner or later the anterior vaginal wall comes down, and gradually stretches open the vaginal orifice until at length the uterus comes down, and the condition becomes the same as before the operation. But if a pessary is inserted, the extension forwards of the perineum presses the anterior end of the pessary well forwards; and then when the patient strains the pessary is forced against the pubic rami and held back by them; and thus the vagina is kept extended, and its orifice saved from any dilating force.

Posterior colporrhaphy *alone* is called for when there is rectocele. Rectocele without uterine prolapse is rare, but when it is present an extensive posterior colporrhaphy will cure the patient.

The risk of colporrhaphy, if done by an operator careful to secure asepsis, is practically nothing.

2. **Alexander's operation**—that is, shortening the round ligaments. This operation is, for prolapse, useless. If done, the only difference in the patient's condition is that, instead of the uterus coming down leaning back, it comes down leaning forwards. I therefore do not here describe this operation.

3. **Ventral fixation, or hysteropexy.**—This consists in opening the abdomen and stitching the uterus to the abdominal wall. This operation is the most perfect cure that at present can be attained.

How to perform ventral fixation.—You will need one assistant, besides the anæsthetist, and the following instruments :—

> Scalpel.
> Toothed dissecting (conjunctiva) forceps.
> Six artery forceps.
> Two blunt volsellæ.
> Hagedorn's needle, No. 4, and holder.
> Silkworm gut.
> No. 1 catgut.
> Scissors.
> Gamgee tissue, iodoform, sponges, razor, binder, etc.

Put the patient in the raised pelvis position and shave the pubes. Cut through the skin and subcutaneous connective tissue for two or three inches (more or less, according to the fatness of the patient) in the middle line midway between the pubes and the umbilicus. Secure bleeding points with pressure forceps. Divide the linea alba to the same extent, and separate the recti. With the finger strip the peritoneum off the surface of each rectus muscle for about an inch outwards from the incision on each side. Pick up the peritoneum with conjunctiva forceps, and open it, cutting with the flat of the knife

parallel to the belly wall. Put your finger in the opening, and with it as a director extend the opening till it is as large as the incision in the belly wall. Now put two fingers of the left hand down into the pelvis and feel for the uterus. Put the index finger in front of it, and the middle finger behind it, and with these fingers as a guide and guard, pass down a blunt volsella to seize the uterus. With the volsella pull the uterus up to the wound. Take Hagedorn's
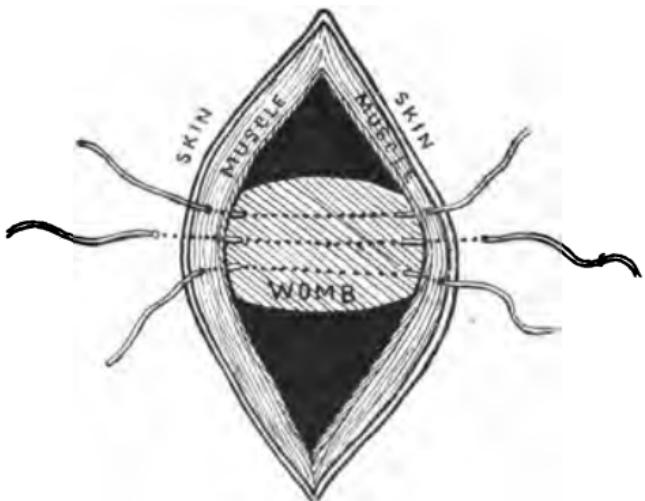
Fig. 36.—Ventral fixation ; diagram showing uterine stitch.

needle, threaded with silkworm gut ; enter it close to one Fallopian tube ; pass it through the fundus till it comes out opposite the other Fallopian tube ; then pass each end of the suture through the ab-dominal muscles (not peritoneum) about an inch from the margin of the wound, and make it emerge through the skin rather nearer the middle line. Take a similar needle, threaded with No. 1 catgut. Pass it through the fundus uteri parallel with and about a quarter of an inch behind the silk suture. Bring the end out on each side through the rectus muscle only,

entering it about an inch from the middle line,
and bringing it out between skin and aponeurosis.
Pass a similar stitch in like manner about a quarter
of an inch in front of the silk stitch (Figs. 36
and 37). Remove the volsella, and for the moment
let the uterus drop. Now put in a stitch of silkworm
gut in front of and behind the uterus to close the
abdominal wall. Enter each stitch through the edge
of the peritoneum. Pass it through a good bundle
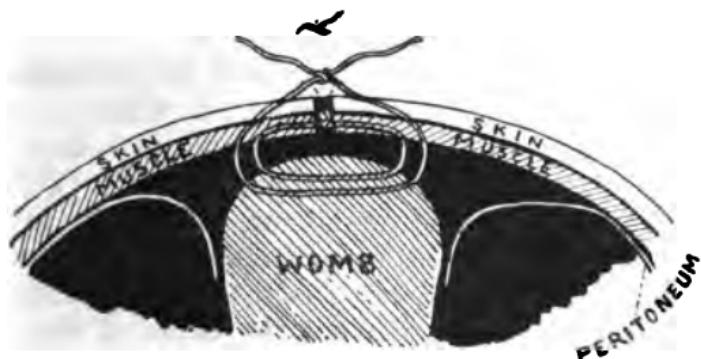
Fig. 37.—Ventral fixation; diagram showing stitches tied.

of muscular tissue, and bring it out through the skin
about a third of an inch from the edge of the wound.
When all the stitches have been put in, pull up the
uterus by the middle stitch, and holding it well ap-
plied to the wound, tie the two catgut stitches and
cut their ends short. Then tie the middle uterine
stitch, and, lastly, the two stitches in front and behind
the uterus.

The silkworm gut stitches should be taken out
on the eighth day. The patient should stay in bed
a fortnight.

Objections to ventral fixation.—These are :
(1) Its risk. Oversights will occur in the practice
even of the most careful ; but the risk is very small.
(2) Adhesions within the peritoneum are sometimes

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absorbed. They are absorbed often enough to make me think stitching of peritoneum to peritoneum unsatisfactory. I therefore have advised suture of uterine peritoneum to muscle, not to parietal peritoneum. When bowel is stitched to muscle, as in colotomy, it is not found that the adhesions are absorbed. But after abdominal section, ventral hernia may first develop after the scar has held firm for twelve years ; and possibly the new attachment of the uterus may also, after many years, give way. (3) The operation lifts up the uterus. If the vulval orifice is very large there may still be protrusion of the vaginal mucous membrane. I think it well, therefore, to precede ventral fixation in women past childbearing by posterior colporrhaphy. (4) It is said to cause difficulty in labour, should the patient become pregnant. It does not always do so ; and in many cases reported as illustrating such difficulty the ventral fixation was not the cause of the difficulty.*

Ventral fixation after colporrhaphy, if the result be permanent, relieves the patient of any necessity for the continual readjustment of the pessary, and lifts the uterus up effectually. At present I do not advise ventral fixation in cases in which the womb can be comfortably kept up by a pessary.

4. Removal of part or the whole of the uterus.—(1) *Amputation of the cervix.* When the cervix is very thick and ulcerated, it may be well, at the same time that colporrhaphy or ventral fixation is done, to cut off the thick cervix. Amputation of the cervix alone without other treatment has no effect upon prolapse.

(2) *Vaginal hysterectomy.* If you take away the uterus, of course, *it* cannot come down. But the

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* *See* Andrews, *Journal of Obstetrics and Gynæcology of the British Empire*, 1905.

vagina descends as before, only that at the bottom of it there is a scar instead of the os uteri.

In elderly widows, prolapse can be cured by removing the uterus *and vagina*. This is obviously only to be done in those too old to think of re-marriage.

CHAPTER XI

UTERINE DISPLACEMENTS (*concluded*)

II.—RETROFLEXION

Names and definitions.—When the body of the uterus is tilted backwards and the cervix upwards, the uterus being straight, it is said to be *retroverted*. When the cervix is in its natural position, but the body is bent back, the uterus is said to be *retroflexed*. In most cases retroversion and retroflexion are combined ; hence neither term alone is quite appropriate to these cases. "*Backward displacement*" is correct English, but is long; "retroversion and flexion" is worse. As there is nearly always bending, and as the degree of bending is unimportant, I shall apply the word retroflexion to the usual kind of backward displacement.

Clinical classification. — From a clinical point of view cases of retroflexion may be divided into five groups :—

       1. Without symptoms.
       2. With symptoms of descent.
       3. With congestion.
       4. Suddenly produced.
       5. With adhesions.

When not important.—(1) Retroflexion is often present in the healthy without symptoms. Such cases come not for examination.

(2) Retroflexion is usually present with prolapse.

If the body of the uterus is not tender, the combination of retroflexion with prolapse is not of moment.

When important.—(3) Retroflexion sometimes produces venous congestion of the body of the uterus.* Behind the uterus is the pouch of Douglas, bounded on each side by a peritoneal fold running
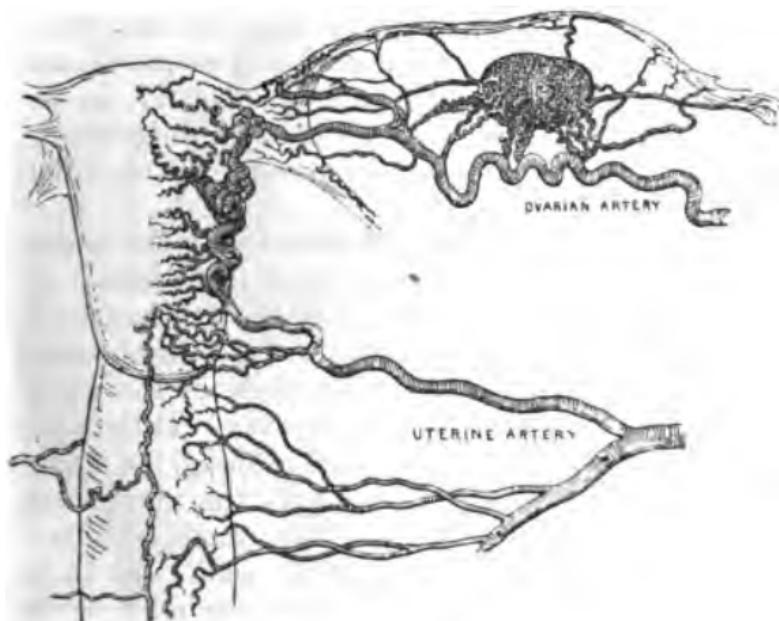
Fig. 38.—Showing blood supply of uterus. (*After Hyrtl.*)

from the uterus back to the sacrum. Sometimes these folds are sharp bands. The blood returns from the uterus by veins that run outwards in the broad ligament (Fig. 38).* If the body of the uterus sinks between sharp and firm utero-sacral ligaments, the veins in the broad ligaments are pressed against the sharp boundaries of Douglas's pouch, the return of blood through them is hindered, and congestion of the

* *See* Sir J. Williams on the circulation in the uterus, *Obst. Trans.*, vol. xxvii.

body of the uterus is the result. It becomes tender and sometimes swollen. I think that in about one case in ten retroflexion produces congestion.*

Symptoms from retroflexion.—In cases in which there is congestion of the body of the uterus from retroflexion the pain is greater, more persistent, and less quickly relieved by lying down. In some rare cases it is not relieved by lying down. In about 40 per cent. of those who come for treatment, pain with menstruation is increased or acquired, and the menstrual flow is increased in quantity, in frequency, or in both.† There is pain on defæcation,† especially if hard scybala are passed. Sexual intercourse is painful.

The diagnosis of retroflexion.—On vaginal examination a lump is felt behind the uterus. (*a*) The lump is of the size, and has the symmetrically rounded shape of the uterine body. (*b*) On bimanual examination you cannot feel the body of the uterus in its natural position above the cervix. If the lump is a tumour or a pelvic effusion pushing the uterus forwards, you will feel the body of the uterus with the external hand more easily than usual, because it is pushed nearer the abdominal wall. (*c*) If bimanual examination is not decisive, as may be the case in a fat or nervous patient, pass the sound, unless there be reason to suspect pregnancy. If the lump is the body of the retroflexed uterus, the sound will pass upwards and backwards the full length of the uterine canal (Fig. 39). In order to be certain that the lump is the uterine body, move the handle of the sound (not its point) in a semicircle, so that the point may move upwards and forwards. If the lump

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* *See* papers by the Author, *Obst. Trans.*, vols. xxxiii., xxxiv., and xxxv.

† For evidence of these statements *see* papers by the Author in *Obst. Trans.*, vols. xxxiv. and xxxv.
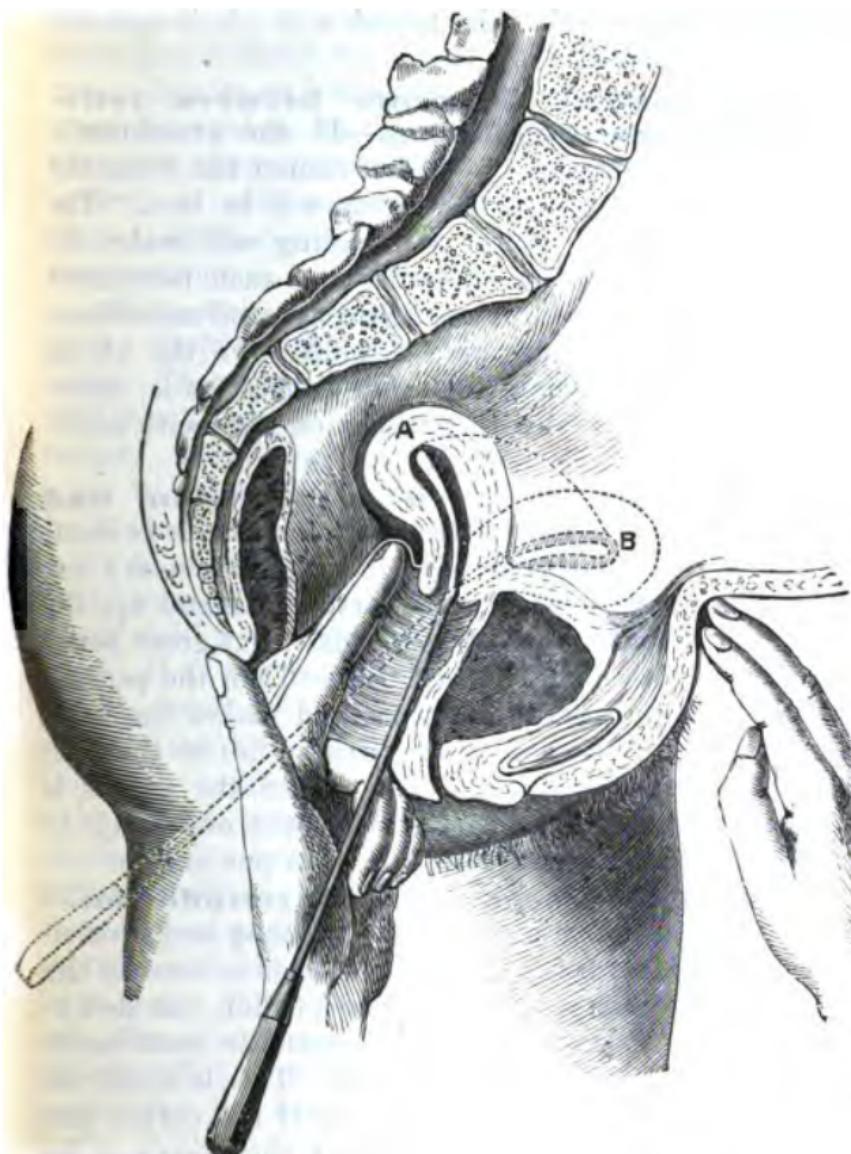
Fig. 39.—The diagnosis of retroflexion by the sound, which
enters with the concavity backwards (A). When rotated,
so that it comes into the position shown by dotted outline
(B), the retrocervical swelling is removed, and the body of
the uterus can be felt by the hand on the abdomen. (*After
R. Barnes.*)

is the uterine body, the sound will lift it upwards and forwards.

Mechanical difference between retroversion and retroflexion.—If the attachments of the cervix are firm, so that it cannot rise when the body is driven down, the uterus will be bent. The resistance of the uterus to bending will make the cervix move a little forwards, and such movement will pull on the utero-sacral ligaments, and make them more tense and more able to hold down the uterus than they were before. Uterine congestion is, therefore, more frequent with retroflexion than with retroversion.

Difference between retroversion and retroflexion.—In retroversion the uterus is comparatively rigid, hence when a vaginal pessary extends the vagina, pulling the cervix back and up, the body of the uterus moves forwards. But great bending of the uterus implies softness. Then the pessary pushes up the posterior fornix, and makes the bend more acute. The end of the pessary lies in the concavity of the bend (Fig. 39). When the uterus is neither straight nor sharply bent, the only way to find out what a pessary will do is to put one in.

Changes associated with retroflexion.—With retroflexion there often go swelling and erosion of the posterior lip of the cervix. This is because the vessels which supply the vaginal portion run downwards to it. Hence when the uterus is bent back, these vessels may be compressed. This is likely to cause swelling of the posterior lip if the cervix has been torn in childbearing, so that the posterior lip only receives blood from above.

With retroflexion there often goes reflected pain over the area supplied by the tenth and eleventh dorsal segments of the spinal cord. As the body of the uterus sinks, it drags upon the ovaries and tubes,

and therefore the ovaries can often be felt through the vagina without the aid of the hand on the abdomen. This is called *prolapse of the ovary.* If the ovary be tender, its descent exposes it to contact. Change in the position of the ovary does not make it tender ; it only makes it more easily felt. Such ovaries often cease to be tender without altering their position.

Retroflexion without prolapse. — Tension of the utero-sacral ligaments tends to hinder prolapse. Therefore when retroflexion is combined with much descent, the body of the uterus is seldom tender. It follows that the amount of descent is no index to the need for treatment.

Exceptional cases of sudden retroflexion. —(4) In a healthy woman the uterus may be suddenly retroflexed during an unusual strain. Such an effort suddenly raises the pressure within the abdomen. If at the time of the effort the uterus is so far leaning back that the pressure falls on its anterior surface, the body of the uterus may be driven into Douglas's pouch. If the side walls of the pouch are tight enough to press on the veins running from the uterus in the broad ligament, they will obstruct the return of blood from the uterus. The patient will complain of sudden pain, referred especially to the sacrum, and she may feel faint and giddy and perhaps sick. If the patient lies down, the uterus may rise, the symptoms pass off, and no further trouble follow. But if the sides of Douglas's pouch are not only tight, but very close together, they may nip the body of the uterus, and so prevent it from rising. Such nipping is rare.

These cases are infrequent, but important, because if properly treated they get well in a few days ; while if not treated, pelvic trouble may last for years. They may occur in nulliparæ, and even in virgins.

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Treatment of acute retroflexion. — This consists in three things. (1) Order the patient to stay in bed. (2) Push the uterine body up with the finger either by the vagina or by the rectum. If it be really held down by the sides of Douglas's pouch, you will feel it slip suddenly past the detaining bands. (3) Direct the patient, if she feel any return of the pain which accompanied the displacement, to place her-
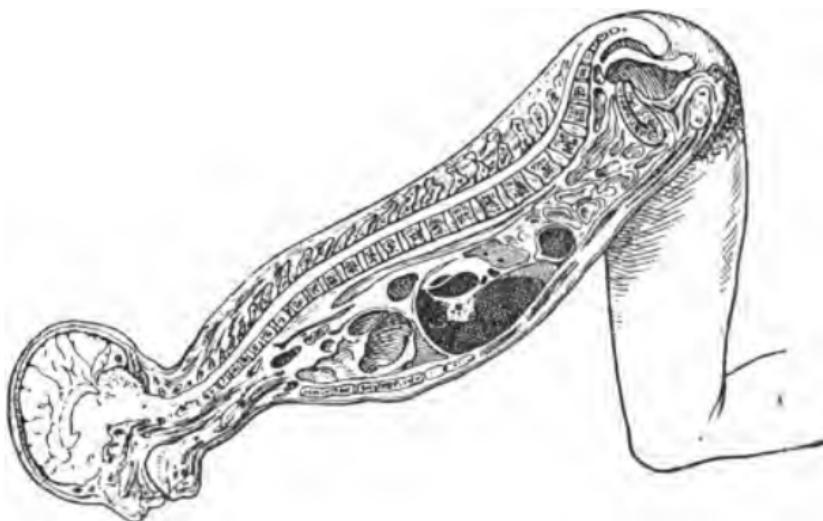
Fig. 40.—Patient in knee-elbow position : the intra-abdominal pressure acts downwards and forwards, the vagina is expanded with air, the uterus pulled upwards and forwards.

self on her elbows and knees, and remain in that position until the pain has gone. In this position the direction of the pressure within the abdomen is reversed ; instead of pushing the uterus down it tends to pull it up (Fig. 40). If this treatment be applied early, a few days of its continuance will cure the patient.

Treatment of chronic retroflexion. — If the body of the uterus is *not tender*, all that is wanted is to support it. A ring, or a Hodge's pessary, should

be applied as for prolapse. But if the body of, the uterus is tender a hard pessary which presses on the tender uterine body will make the patient's pain worse.

Choice of a pessary (Fig. 41).—Apply Hodge's pessary, and feel bimanually the position of the uterus. If the displacement be not reduced, pass
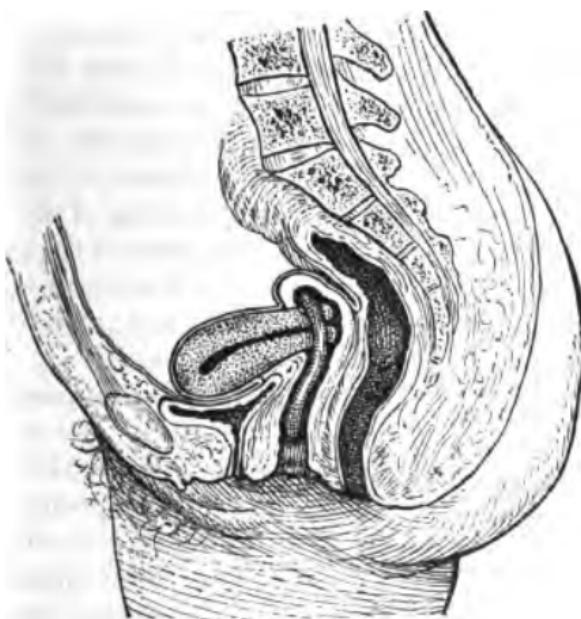
Fig. 41.—Hodge's pessary anteverting uterus.

the sound, and with it put the uterus into a position of anteversion. The precise shape of the Hodge's pessary is unimportant. The essentials are : it should antevert the uterus ; no part of the vagina should feel tense ; and the pessary should cause no pain. If the anterior end be curved up, and is broad, it is held in the upper part of the vagina, and in case of expulsive effort is held in place by the pubic bones. The pessary ought not to press on the body of the uterus at all.

With the most effective pessary there is still a little bearing-down on exertion, and a little irritation of bladder, but these troubles are reduced to trifles. Dyspareunia will cease, and the increased menstrual loss and pain will be removed.

If you cannot get the uterus anteverted by a Hodge's pessary, use a thick ring of watch-spring covered with indiarubber. A ring will often antevert the uterus as effectually as a Hodge. Sometimes when you apply a ring which does not at first antevert the uterus, in a few days you will find that the uterus has risen, and is in anteversion. If it does not antevert, it pushes up the uterus by extending the vagina and interposing the thickness of the pessary between the uterine body and the level of the posterior vaginal wall. In many cases this is enough to relieve the uterine veins from pressure, and thus diminish uterine congestion.

Results of treatment by pessaries.—In cases in which the body of the uterus is not tender, treatment by vaginal pessaries is successful. Cases in which the displacement causes symptoms of prolapse only form about nine-tenths of the whole. In most of the remaining tenth (in which there is congestion of the uterine body) a vaginal pessary is effective.

How long must the pessary be worn ?— This depends upon the degree to which the displacement is due to structural defects of the pelvic floor. If the uterus has sunk back because the pelvic floor has been permanently weakened by tearing, or by over-stretching, then it will sink again directly the mechanical support is removed. If, on the other hand, the displacement was due to relaxation in the tone of the muscular and fibrous structures of the pelvic floor, like that which produces the slighter degrees of flat foot and of lateral curvature of the

spine, then the pessary may be removed if the patient's general health has improved, and the displacement has ceased to cause symptoms. If the patient is otherwise in good health, the vaginal orifice large, and there is commencing cystocele, she may have to wear a support for many years, if not for the rest of her life. If the perineum is firm, and there is no cystocele, if the

Fig. 42.—Hodge's pessary supporting but not anteverting the uterus. Efficient if uterus be not tender; aggravating the symptoms if the uterus be tender.

patient has lost flesh, is nervous, sleeps badly, has a poor appetite, and suffers from pains elsewhere than in the pelvis, then it is likely that when her health is re-established she will need no further local treatment.

The cases in which treatment by a vaginal pessary fails are those in which, with little or no prolapse, the uterus is sharply retroflexed, so that a vaginal pessary goes into the concavity of the bend (Fig. 42). If

with this the margins of the pouch of Douglas are tense enough to incarcerate the uterus, or to press upon the veins in the broad ligaments, the symptoms will be enough to unfit the patient for the ordinary duties of life.

There are four modes of treating cases of retro-flexion in which a vaginal pessary does not give relief. These methods are : (1) an intrauterine pessary ; (2) vaginal fixation ; (3) Alexander's operation ; (4) ventral fixation.

1. **Intrauterine pessaries.**—The best of these are rigid stems, of a diameter smaller than that of the uterine canal, made of glass, vulcanite, or aluminium. The stem is placed in the uterine canal, and while it is there the uterus must be straight. If a vaginal pessary be applied at the same time the combination of the two may keep the uterus ante-verted.

Such instruments were at one time largely used, and often caused peritonitis. All the time the patient is wearing the stem she must be under close medical supervision, that at the earliest sign of any ill effect—pain, hæmorrhage, discharge, or fever—the instrument may be removed. Without such close supervision she is in continual danger. For these reasons I advise against the use of these instruments.

2. **Vaginal fixation.** — The object of this operation is to make retroflexion into anteflexion by sewing the anterior surface of the uterine body to the peritoneum or to the cellular tissue in front of the cervix. It has been thought indicated in cases in which there is little or no prolapse, the uterus is retroflexed, and its body is tender. Vaginal fixation leaves no scar in the abdominal wall, and therefore no liability to hernia. It is easy, and the risk is almost *nil*. I doubt whether the change in position is permanent, and therefore prefer ventral fixation.

How vaginal fixation is done.—You need one assistant, besides the anæsthetist, and the following instruments :—

> Clover's crutch.
> Two volsellæ.
> Scalpel.
> Toothed dissecting forceps.
> Hook.
> Blunt-pointed scissors.
> Half-curved perineum needle in handle.
> No. 4 China twist.
> Macintoshes, sponges, sponge - holders,
>   vaginal douche.

Put the patient in the lithotomy position. If there is enough hair on the labia to be in the way, clip it close or shave the labia. Grasp the cervix with a volsella, and pull it down to the vulva. The upper part of the vagina will be inverted and pulled down with the uterus ; the bladder will be in relation with the part which is not inverted. For greater safety define its position with the sound. Cut with a scalpel in the middle line, beginning where the inversion of the vagina begins, and cutting quite down to the insertion of the vagina into the cervix uteri. You will thus open the utero-vesical cellular tissue, but unless you extend the incision beyond the line of inversion of the vagina, you will not wound the bladder. Cut through the cellular tissue to the uterus. Then with the fingers separate the bladder from the uterus upwards and at the sides. This done, you will feel the thin sheet of vesico-uterine peritoneum before your finger. Grasp this with forceps, pull it down, and open it close to the uterus with blunt-pointed scissors. When you have made a small opening, push first one finger, then two, through the hole, and thus tear through the peritoneum until the opening allows room

for the wide separation of two fingers. You will now be able to feel the uterus. Place one or two fingers of the left hand in front of the uterus, to keep bladder and bowel out of the way. Take a half-curved needle on a handle, threaded with No. 4 China twist, and pass it, guided and guarded by the fingers of the left hand from side to side through the anterior uterine wall, just above the os internum. When the eye of the needle has emerged so that you can see it, seize the loop with a hook, pull one end through, and withdraw the needle. You have now a ligature passing through the uterus. Hold the uterus down by this, and pass, in the same way, a second stitch, about a third of an inch nearer the fundus. Hold the uterus in position by this, and pass a third, still nearer the fundus. The next step is to secure these stitches to the vagina. Pass a needle in a handle through the vaginal mucous membrane and underlying fibrous and cellular tissue, entering it at a point corresponding to the stitch nearest the internal os, and taking up a good bundle of cellular tissue. When the eye of the needle is visible, thread it with the corresponding end of the uterine stitch, and withdraw it. Repeat this on the opposite side. Bring the other two uterine stitches in the same way through the vagina. When this has been done, the three stitches hold the anterior serous covering of the uterus applied to the cut surface of vaginal fibro-cellular and muscular tissue (Fig. 43). Clean the raw surfaces, and then tie the stitches. Leave the ends an inch or two long, so that at the end of a week you can remove them. You may use catgut sutures, cut them short, and leave them to be absorbed; but thick catgut is absorbed slowly, and thin catgut may break.

3. **Alexander's operation.**—This is shortening the round ligaments. The operation permanently

cures retroflexion of the uterus; but it does not
cure prolapse. If cystocele is associated with retro-
flexion, your patient will not be cured. But in those
rare cases in which without appreciable prolapse
the body of the uterus is sharply bent back, is
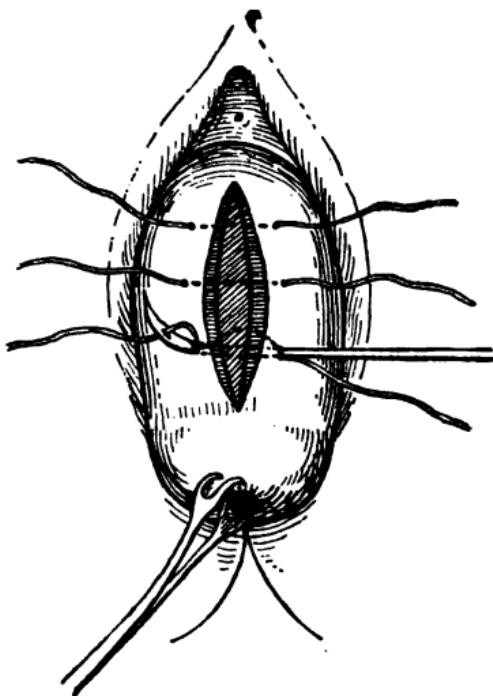
Fig. 43.—Vaginal fixation; stitches in position before tying.

painful and tender, and a pessary fails to relieve,
Alexander's operation is a means from which we
can promise a lasting result.

The objection to Alexander's operation is its
risk, the danger to life, and the danger of suppura-
tion of the wounds. Operators have failed to find
the ligaments, and in some cases fatal injury has been
inflicted in the search. Secondly, pulling up the round
ligaments involves detaching them from the cellular
tissue in which they lie. This, together with the

tension that is put upon them, seems to make them liable to deep suppuration, which may spread to the peritoneum, and thus fatal peritonitis follow a week or so after the operation. This may happen although the operation wound is healed and the ligament firm in its new situation. The pus may escape by the operation wounds, which then do not heal ; the ligaments, after the sutures are removed or absorbed, slip back into their old place ; the wounds heal by granulation from the bottom, with profuse suppuration. The net result is thus a long illness and no benefit. Dr. Alexander's experience shows that bad results are, in competent hands, infrequent. It has been done more largely in America than in England, and the statements of American writers would lead one to think that many unpublished disastrous cases have occurred. There is yet another disadvantage, viz. that the inguinal canals cannot be opened up without favouring hernia. I advise ventral fixation rather than Alexander's operation. But I claim not finality for my opinion, and therefore I proceed to describe Alexander's operation.

Method of performing Alexander's operation.—I describe what I think the best way of doing it. One assistant is required, besides the anæsthetist, and the following instruments :—

> Scalpel.
> Dissecting forceps.
> Two Wells's pressure forceps.
> Half-curved needle ; aneurysm needle.
> Wells's needle-holder.
> No. 1 catgut.
> Scissors.
> Sponges, razor, iodoform, Gamgee tissue.

Shave the pubes. Feel the spine of the pubes, and cut parallel with Poupart's ligament from the spine

to about an inch or two above and outside it, the length of the cut depending on the fatness of the patient ; in fat patients you need a longer incision. Divide the cellular tissue until you have exposed the glistening aponeurosis of the external oblique. Secure any bleeding points with pressure forceps. You will see the fibres of the aponeurosis diverging to form the external ring. Now carefully open up the inguinal canal by cutting through the aponeurosis parallel with the skin incision for about an inch. Some reddish tissue, mixed with fat, will bulge. This is the end of the ligament. Pass an aneurysm needle from below upwards underneath the outer part of this mass, hook it up, and with finger and thumb feel for the ligament in the tissues outside the aneurysm needle. Having felt this, strip off with the finger and thumb or the handle of the scalpel, and the edge, if necessary, the fat and cellular tissue which surround it. As soon as this has been completely done, the ligament can be pulled out easily, as a white cord as thick as a No. 8 bougie. Pull the ligament up until you judge that the uterus has been raised enough. Then with catgut stitch it into the inguinal canal, passing each stitch first through the skin and subcutaneous fat, then through the tendinous margin of the exposed inguinal canal, next through the round ligament, then through the opposite wall of the inguinal canal, and bring it out through the skin. Put in stitches about a quarter of an inch apart, and thus stitch the ligament into the whole length of the inguinal canal, that it may fill and close it. Then cut off the redundant end of the ligament. Close with sutures the rest of the skin wound. Do the same thing on the opposite side. Powder well with iodoform, and apply Gamgee tissue. Some insert a Hodge's pessary, to be worn for two or three weeks after the operation ; this is harmless, and a good

precaution. Let the patient have a pillow to support her knees in a flexed position, to lessen strain on the stitches. She should keep her bed for three weeks after the operation, by which time the wounds ought to be healed.

4. **Ventral fixation.** — In retroflexion with descent, in which pessaries fail, ventral fixation is the only treatment that will cure. There is sufficient prospect of benefit lasting a long time to make this operation worth doing in patients whose uterine displacement makes them chronic invalids.

5. **Adherent retroflexion.** — Sometimes the uterus is fixed by peritoneal adhesions in a position of retroflexion. There are two classes of such cases (a) those in which there are also fixed inflammatory lumps at the side of the uterus, and (b) those in which there are no such lumps.

In the first class (a) the inflammatory lumps are more important than the uterine displacement. Pelvic inflammations will be described in subsequent chapters. In the second class (b) the displacement may cause persistent pain and tenderness, which can be cured by ventral fixation. When the abdomen has been opened with the fingers, you can break down adhesions between the uterus, ovaries, tubes, and adjacent peritoneum. If there is much thickening of a tube it can be removed. The breaking-down of adhesions adds risk to the operation.

Liberation of the uterus without opening the peritoneum.—It has been advised to break down adhesions in these cases by pushing up, under anæsthesia, the uterine body without opening the peritoneum. In the cases in which there are inflammatory lumps such pressure, if adhesions are really broken down, may cause fatal hæmorrhage (as in a case reported by R. Barnes*) or peritonitis

* *Obst. Trans.*, vol. xx.

from bursting of pus cavities. If there be merely thickening, the thickened peritoneum may be pushed up, carrying the uterus with it, but cannot be separated from the uterus.

III.—OTHER PATHOLOGICAL DISPLACEMENTS

If the wall of the uterus be thinned by atrophy and fixed with its body bent back, its canal may at the bend be obstructed, and pus or mucus be retained in the uterine cavity.* But when the uterus is healthy and its wall of normal thickness, retention of blood from retroflexion is unknown.

Schultze has elaborately described how inflammation around the uterus may lead to anteflexion, anteversion, or to pulling of the uterus to either side of the pelvis. These changes are correctly called pathological, but they are unimportant. The patients in whom they occur are ill because they have inflammation, not because the uterus is pulled this way or that.

* I have elsewhere collected instances of this. See *Obst. Trans.*, vol. xxiv., p. 168.

CHAPTER XII

CONDITIONS RESEMBLING PROLAPSE

THERE are certain conditions in which the patient complains of something coming down or protruding at the vulva, but prolapse, if present, is not the primary condition.

INFRAVAGINAL HYPERTROPHY OF CERVIX

The vaginal portion of the cervix is longer than it should be. It may be two inches long, or even more. In other respects it is healthy. This condition is a congenital malformation.

Symptoms.—It attracts attention usually by causing prolapse. If the vaginal portion be two inches long, it cannot lie at right angles to the vagina, but lies in it, parallel to its walls. Then pressure from above drives it down along the vagina, inverting the upper part of the vagina. There is nothing to oppose its progress until it protrudes at the vulva, and the patient goes to a doctor because her "womb comes down."

The symptoms are dragging, bearing-down pain, relieved by lying down. There is some congestion of the uterus, leading to increased menstrual flow and menstrual pain. The lengthened vaginal portion plays the part of a foreign body in the vagina, and leads to leucorrhœa.

Diagnosis.—You find a protrusion at the vulva. Push this up, so as to extend the vagina as much as possible. When you have done this, you

find that there still protrudes into the upper part of the vagina a length of cervix which no upward pressure will diminish, but that except as to length it is healthy.

Treatment.— This is simple: to cut off the redundant part in such a way as to prevent stenosis of the cervical canal.

Operation.— Instruments required:—

Clover's crutch.
Two volsellæ.
Scissors.
Scalpel.
Half-curved needles.
Needle-holder (Fig. 44).
No. 2 catgut.
Sponges, douche, etc.

Put the patient in the lithotomy position. Pull the cervix down to the vulva, so that the redundant part may be outside it. Ascertain the insertion of the vagina in front and behind. Below this make a circular cut round the cervix, to be a guide to the level at which it is to be cut off. Split the cervix on each side up to this line. Seize each

Fig. 44.—Needle-holder.

lip with a separate volsella. Cut off the anterior lip, making the cut surface gutter-shaped. The cut surface will bleed freely. Stop the bleeding by stitches, bringing the sides of the gutter close together, and

compressing the tissues between. Enough stitches will soon stop bleeding. Leave the ends of the ligatures long, that you may hold the cervix by them. Cut off the posterior lip by similar incisions, and stop bleeding in the same way; cut the ligatures short, and push back the cervix (Fig. 45). By this method you surely prevent stenosis.
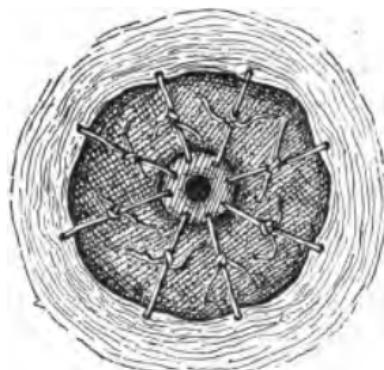
Fig. 45.—Diagram of cervix stitches as described in text. (*After Auvard.*)

VAGINAL CYSTS

How found out.—Cysts of the vagina, when large, sometimes protrude at the vulva, so that the patient thinks that her "womb is coming down." This is the usual way in which they attract attention. The next most common way in which a vaginal cyst is discovered is by its obstructing coitus. A large cyst has been known to cause pain and difficulty in micturition, and even to obstruct the delivery of a child; but cysts large enough to do this are rare. Occasionally vaginal cysts become inflamed; they then are painful and tender, and may cause discharge of pus, which may be streaked with blood.*

* The best account of these cysts is that given by Rutherfoord, *Obst. Trans.*, vol. xxxiii. *See also* Cullen, "Bulletin of the Johns Hopkins Hospital," vol. xvi., No. 171, 1905.

Seat and characters.—Vaginal cysts occur chiefly in the lower part of the canal. They are generally single. Vaginal cysts begin to cause trouble when they reach the size of a Tangerine orange. The largest vaginal cyst on record was the size of a fœtal head. Very rarely they become pedunculated. They may contain serous, or viscid, fluid ; and either kind of fluid may be coloured by the effusion of blood into it, or made turbid with epithelium. Dermoid cysts have been recorded.

Clinical history.—They occur at all ages, but, are more frequent in middle life. They grow faster during pregnancy.

Origin of vaginal cysts.—The opinions held as to their origin are the following :

1. **Glandular retention cysts.**—They may be formed out of vaginal glands by the opening of the gland being stopped up and its secretion retained. This is the most probable origin of thin-walled vaginal cysts.

2. **The bursal theory.**—According to this theory vaginal cysts may be formed by serous effusion taking place into the connective tissue as a result of friction ; the cyst thus being a sort of bursa.

3. **The ecchymosis theory.**—According to this, vaginal cysts result from hæmorrhages into the connective tissue during labour. There is no doubt that in labour hæmorrhage sometimes does take place into the connective tissue of the vagina.

4. **The lymphatic theory,** viz., that vaginal cysts are dilated lymph channels.

5. **Accidental inclusion of mucosa.** — Cullen has often found small cysts low down in the posterior vaginal wall after an operation had been done to repair a ruptured perineum. He thinks such cysts are produced by the inclusion of a detached bit of mucosa between the united surfaces.

6. Dilatation of Gärtner's duct. — Some vaginal cysts are of this nature. Gärtner's duct is a Wolffian duct which remains after growth is complete (Fig. 46). This mode of origin of some cysts
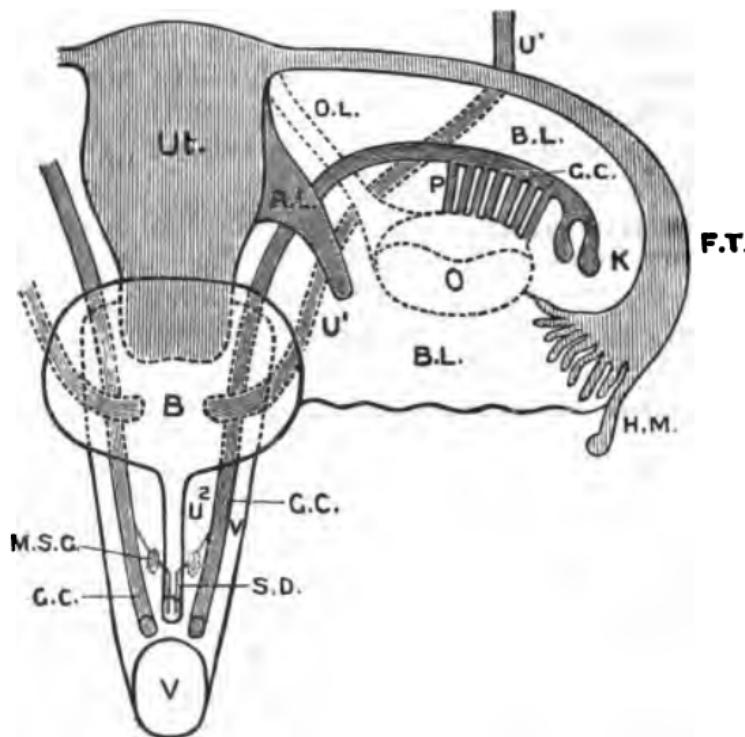
Fig. 46.—Diagram showing fœtal structures out of which cysts may develop. (*After A. Routh.*)

Ut., uterus; A, anus; V, vagina; B, bladder; F.T., Fallopian tube; U¹, ureter; U², urethra; O, ovary; O.L., ovarian ligament; K, Kobelt's tubules; G.C., Gärtner's duct; M.S.G., Max Schüller's glands; S.D., Skene's ducts; P, vertical tubes of parovarium; R.L., round ligament; B.L., broad ligament; H.M., hydatid of Morgagni.

on the anterior vaginal wall cannot be disputed. Cysts on the posterior wall cannot be thus explained.

7. Closure of one half of a double vagina.
—The fusion of the two ducts of Müller (Fig. 47)
may be incomplete ; one duct of Müller being nor-
mally developed, the other imperfectly, so that the
vagina forms a closed cavity. If a uterus menstruates
into the closed vagina, this becomes full of blood :
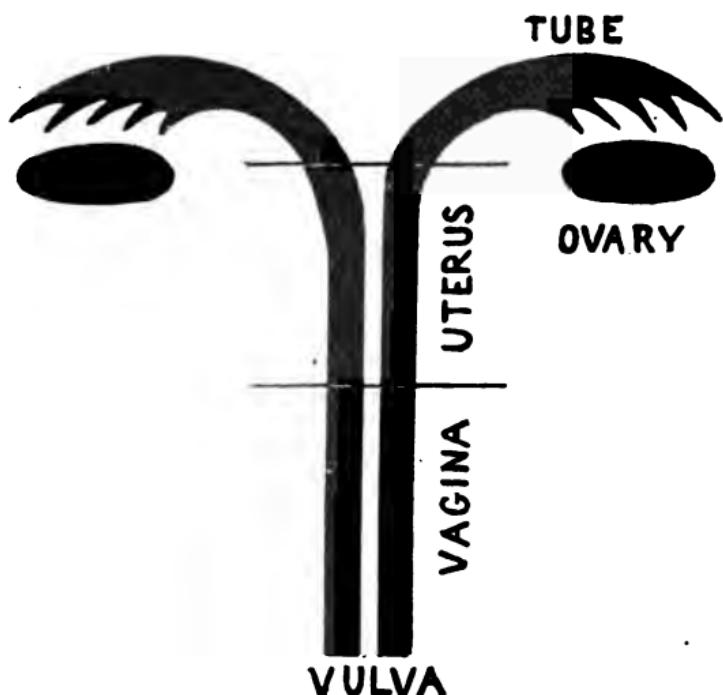
Fig. 47.—Diagram showing ducts of Müller. (*After Auvard.*)

unilateral hæmatocolpos (Fig. 48). Such a cavity is
thick-walled and at the side of the vagina, but more
in front of it than behind. When the cyst is opened,
treacly blood flows out, and after the cavity has been
emptied a cervix uteri can be felt at the top of it.
Faulty development of Müller's duct may exist, in
which the uterus on the defective side has not de-
veloped, but the vagina exists as a closed cavity. As
no menstruation takes place into such a cavity its

contents will not be blood, but either mucous fluid or pus.

Symptoms and diagnosis.—Vaginal cysts may cause bearing-down sensations, or may obstruct coitus, micturition, or delivery. If inflamed, they may cause pain in the pelvis, and tenderness on
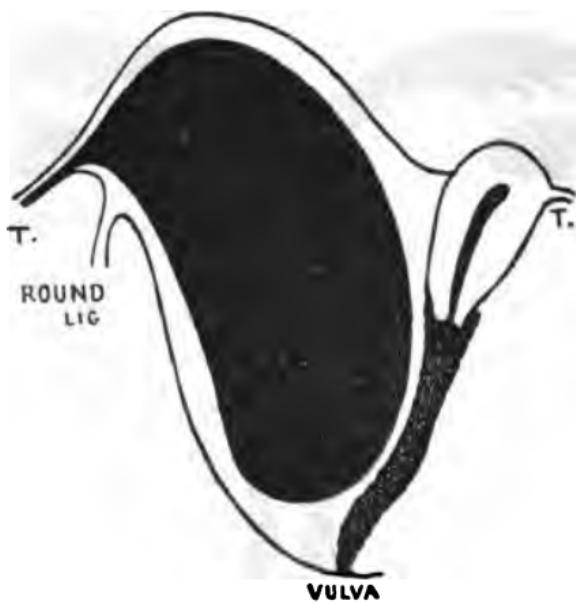
Fig. 48.—Unilateral hæmatocolpos. (*After A. Martin.*)

contact. The presence of a vaginal cyst is found out by local examination.

The cyst may bulge at the vaginal orifice, and look like a cystocele. Distinguish between the two by putting a uterine sound into the bladder, and turning its concavity backwards. If the swelling be a cystocele, you will feel the point of the sound immediately under the most prominent part of the swelling. If it be a cyst, the finger in the vagina will perceive the elastic rotundity of the cyst like a cushion interposed between the finger and the sound in the

urethra. If the projection is from the posterior
vaginal wall, it will resemble a rectocele. Put a fore-
finger in the rectum, and the other in the vagina.
A cyst will be felt between the two fingers.

When a vaginal cyst too high up to protrude at
the vulva is felt the question will be, Is it a cyst or a
solid tumour, a sarcoma or fibroid ? A fibroid is
hard. A sarcoma is deep red, purple, black, or
greenish in colour (from its vascularity and hæmor-
rhages into its substance). A cyst is either of the
same tint as the rest of the vagina, or, if its wall be
thin, of a translucent greyish pink. A urethral diver-
ticulum might be taken for a cyst, but if you pass a

Fig. 49.—Mode of stitching after removal of free part of
vaginal cyst.

uterine sound along the urethra, its point will enter
a urethral sac.

The treatment of vaginal cysts.—A pedun-
culated cyst should be removed by transfixing and
tying its stalk, and then cutting the cyst away. When
the cyst is sessile, cut away the free part of the cyst,
and stitch to the vagina around it the part of the
cyst wall which remains attached (Fig. 49). The
pressure of the stitches will stop bleeding. In time
the exposed part of the cyst will come to resemble the
rest of the vaginal mucous membrane. It is difficult
to dissect out these cysts, and unnecessary.

FIBROIDS OF THE VAGINA

These are commoner on the anterior than on the posterior vaginal wall. They may be pedunculated, but are more often sessile. Most are small. They are composed mainly of white fibrous tissue, with a few unstriped muscular fibres. A vaginal fibroid may pull down the vagina and cause prolapse, as in a specimen in the London Hospital Museum.* This prolapse differs from the ordinary form in that the bladder and urethra do not descend, as they do when prolapse is caused by pressure from above.

Symptoms.—Fibroids of the vagina occur in middle life. They cause bearing-down and a protrusion from the vagina. If large enough, a vaginal fibroid may interfere with micturition, with sexual intercourse, or with delivery.

Diagnosis.—The fibroid is recognised by its hardness, roundness, and distinctly circumscribed shape. It cannot be distinguished from sarcoma until it has been examined with the microscope. Sarcoma may be suspected if the tumour is dark in colour from vascularity and ecchymosis. Sarcomata used to be called " recurrent fibroids."

Treatment.—Remove them. Cut through the mucous membrane over the tumour, so as to lay open its capsule. Then seize the tumour with a strong volsella, and, aided by a blunt instrument to break down its attachments, drag the tumour out of its bed. Should it be difficult to get the tumour through the vaginal orifice, cut it into pieces with scissors.

* 2,130.

Part III.—PELVIC INFLAMMATIONS

CHAPTER XIII

ACUTE GENERAL PERITONITIS

Common causes of peritonitis.—Taking both sexes together, in nine cases out of ten peritonitis depends upon some condition of the alimentary canal or the glands opening into it. In women, the cause is disease of the genital organs in not more than one case in five.

Causes peculiar to women. — The chief causes peculiar to women are the following : (1) Septic infection during delivery or an operation. (2) Ulceration and perforation of a Fallopian tube. (3) Escape of pus from the open end of a Fallopian tube. (4) Rupture of a suppurated ovarian cyst. (5) Gangrene of an ovarian cyst from twisting of its pedicle. (6) Degeneration and rupture or sloughing of a fibroid. (7) Rupture of a suppurated extra-uterine gestation sac. (8) Retroversion of the gravid uterus, causing peritonitis either directly (the mode of production in this case being obscure), or indirectly, by causing retention of urine, sloughing of vesical wall, perforation of bladder, and escape of urine into the peritoneal cavity.

Symptoms of peritonitis.*—The symptoms of general peritonitis represent the reaction of the peritoneum against injury ; and they are the same from whatever part the injury comes.

* *See* Treves, "Peritonitis." London, 1894.

These symptoms are liable to variation. Irritation of the peritoneum promptly produces, as a reflex effect, tenderness of the skin over the belly, with fixity of the abdominal muscles and lower part of chest. Hence the belly is rigid, and breathing is thoracic. As peritonitis advances, the muscular coat of the bowel becomes paralysed. At the same time, the disturbance of the circulation through the bowel modifies its secretions, and its contents decompose with evolution of gas. From these two causes there is meteorism. These symptoms are most marked when acute peritonitis comes on in previously healthy persons ; when the peritoneum has been long irritated they are less marked. In some cases the belly is throughout retracted. The pain is at first general, and if the peritonitis is general the tenderness is over the whole abdomen. If the patient survive, it becomes more and more local, for at places remote from the spot where poison was introduced the phagocytes are able to devour it, while they cannot cope with it at a place where it is in great quantity, and perhaps fresh supplies are pouring in.

Any irritant to the peritoneum produces great prostration, and if the irritant be severe enough, the patient may die before peritonitis has been set up. Urine and fæces are not septic ; they do not poison wounds, but they are highly irritating to the peritoneum.

Vomiting is almost always present. Sometimes the patient brings up green stuff in such abundance that there is evidently regurgitation from the bowel. It has been said that the great pathological fact in peritonitis is poisoning ; that the poison is in the bowel, and regurgitates into the stomach ; that it is absorbed through the liver into the blood.

The temperature is usually raised, but some cases run their whole course without any elevation of

temperature. The pulse is always quick and small; this is a more constant feature than fever. The tendency to death is by asthenia.

Diagnosis between hæmorrhage and peritonitis.—In both there is collapse and a small, quick pulse. But in hæmorrhage the mucous membranes are blanched; in peritonitis, not. In hæmorrhage the belly is not rigid nor tender; in peritonitis it is both. In hæmorrhage respiration is partly abdominal; in peritonitis it is wholly thoracic. In hæmorrhage vomiting is absent or slight; in peritonitis it is a marked and distressing symptom.

Diagnosis between peritonitis and abdominal shock.—After every operation in which the belly is opened there is some degree of shock; it is difficult during the first day or two to distinguish between shock and peritonitis. When all the symptoms of peritonitis are well marked—rapidity of pulse, high temperature, abdominal pain, flatulent distension, persistent vomiting, haggard, pinched, and anxious face—there is little room for doubt. But, except the last, any one of these symptoms may be present without peritonitis. The most constant sign is one recognisable by experience, though difficult to define, viz., the expression of the face. In peritonitis the face looks anxious, pinched, haggard. If the expression is cheerful, hopeful, contented, placid, the patient will do well.

Treatment of acute peritonitis. — There are two ways of treating peritonitis: 1, expectant; 2, operative.

1. **Expectant.**—(1) *Rest*. The patient should have everything done for her, and even passive movements should be limited as much as possible. (2) *Counter-irritation* will lessen pain, and do no harm. (3) *Support strength* with food and stimulants. (4) *Relieve pain*.

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The issue depends upon whether the patient's strength will outlast the intraperitoneal battle between the morbific micro-organisms and the phagocytic leucocytes.

2. **Operative.**—The treatment of acute peritonitis by operation is recent. But it is the only treatment that can be called curative. Three things are indicated.

(1) *Remove cause.*—When peritonitis has been set up by the entrance of poisonous or irritating matter from a diseased part, the first object of operative treatment is either to remove or to shut off this diseased part, so that no more poison may get from it into the peritoneum.

When a patient is known to have had a chronic disease, such as an inflammatory lump in the pelvis, and general peritonitis suddenly begins, there is a probability amounting almost to a certainty that the peritonitis has started from this chronic disease. If the patient is seen soon after the general inflammation has begun, there is a fair possibility of saving life, and the operation should be done. The onset of perforative peritonitis is marked by shock. This is followed by reaction, so that at the end of twenty-four hours the patient may think that she is very much better. If there has been escape of pus into the peritoneal cavity, this is the time at which an operation should be done.

(2) *Drainage and saline injection.*—A method has lately be n developed by which it is claimed that most of the cases of general peritonitis can be saved. This consists in : (*a*) *Drainage.* Open the abdomen, and put in a drainage tube reaching to the bottom of Douglas's pouch.* Keep the patient

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* I speak here of general peritonitis originating in the pelvis. In cases beginning elsewhere, drainage may be needed in other places.

propped up in bed with the body upright, so that all fluid in the peritoneum may gravitate to Douglas's pouch. (*b*) *Saline injection.* A tube is placed in the rectum, reaching as high as possible. This is connected by indiarubber tubing with a vessel containing normal saline solution placed at from six to twelve inches above the level of the patient's body, so that there may be a continuous gentle flow of saline fluid into the bowel.

The *rationale* of the treatment is as follows :—In this disease, owing to the vomiting, and the little fluid ingested, the body is very short of water, and without water protoplasm cannot do its work ; the leucocytes cannot combat the microbes. The injec-· tion supplies the needed water. While the blood is short of water, there is every inducement for the microbe-laden exudation in the peritoneum to pass into the blood. The introduction of saline fluid into the blood alters the relations, so that instead of the current being from peritoneum to blood-vessels it is from blood-vessels to peritoneum. This is shown by the increased discharge from the drainage tube.

(3) *Relieve obstruction.*—In peritonitis there is often obstruction of bowels, shown by copious vomiting of green or brown fluid, meteorism, and constipation. The distension of the bowels with gas is partly due to paralysis of the muscular coat of the bowel, partly to decomposition of intestinal contents brought about by disturbance of the circulation through the bowel coats. The patient is being poisoned by toxins formed in her alimentary canal. The extensive manipulations involved in opening the belly and searching for a cause of obstruction will almost certainly be fatal. It is better to make a small incision, stitch to its margin the piece of distended bowel that presents ; then open the bowel, and put in an indiarubber drainage tube. The poisonous

intestinal products can then escape, and the patient will have a chance of recovery. If she recovers, afterwards, when she is in good condition, the necessary operation for discovery and treatment of the seat of obstruction, and closure of the artificial anus, can be done with a good prospect of success.

CHAPTER XIV

PERIMETRITIS

What is perimetritis?—Perimetritis means pelvic peritonitis set up by disease of the uterus or its appendages. Parametritis means inflammation, from similar causes, of the cellular tissue.

Early symptoms of pelvic inflammation.—When inflammation is limited to the pelvis, in the first days of the illness we cannot distinguish between perimetritis and parametritis.

Inflammation leads to the exudation of lymph, which (*a*) either becomes organised into fibrous tissue, or (*b*) the exudation is serous, or (*c*) it becomes pus. The diagnosis of the seat of the inflammation cannot be made until enough lymph has been exuded to form a swelling that can be felt.

The symptoms of perimetritis. — These consist of fever with pelvic pain. The disease often begins with shivering.

(1) The temperature during the first few days is often from 103° to 104° F., or even higher. The pulse and respiration are quickened. Although fever is the rule, yet absence of elevation of temperature does not negative inflammation. In some cases of fatal peritonitis, and in many suppurating ovarian cysts, there is no rise of temperature, but the pulse is quick.

(2) There is pain. In the first few days this is severe. The patient lies with both knees drawn up. The abdominal muscles are contracted ; the belly is

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hard. The pain is constant, though with remissions
in its severity. As the case improves remission of
pain is replaced by cessation of pain, the intervals of
freedom from pain become longer and longer, and
the attacks of pain less frequent and less severe. Pain
is usually the last symptom to disappear. When
the patient has recovered in every respect but occa-
sional attacks of pain, the extent to which this relic
of the disease interferes with her work or her pleasure
depends upon the tone of her nervous system. A
strong woman will take no notice of occasional pelvic
aching; a weak one will often be an invalid for
months. Chronic pain persisting after all signs of
active inflammation have disappeared may be due
to the presence of adhesions. The omentum is
often adherent in the pelvis; such adhesions will be
pulled upon in movements of the stomach and colon;
and removal of pain has followed an operation in
which such adhesions were severed. Often patients
will say that they have pain which precedes defæca-
tion, and such pain may be due to adhesions being
stretched by the peristaltic movement of the bowels.

(3) At the onset of the disease there is often
vomiting, and with the fever there are the usual febrile
symptoms of loss of appetite and thirst. There is
constipation, because the patient does not take as
much food as usual. Defæcation is painful, because
there is congestion of the rectal mucous membrane.
There is generally scalding in micturition, and irrita-
tion of bladder.

(4) There is usually some wasting.

Perimetritis subsides gradually. Recovery, even
when speedy and complete, is often interrupted by
slight relapses. Even if the patient have no recur-
rence of febrile illness, she remains for months or
years more liable to pelvic pain when her health is
from any cause depressed than she was before.

Diagnosis.—A diagnosis cannot be made until enough lymph has been effused to produce an increase of resistance that can be felt by the vagina. Then the kind of inflammation can be ascertained from the situation of this increased resistance. When tenderness has ceased to be great, the condition of the uterine appendages can be explored.

There are three kinds of chronic perimetritis, according to the nature of the exudation—adhesive, serous, and purulent. The commonest kind is *adhesive*. In this form the lymph becomes organised into fibrous tissue which binds the pelvic viscera together. If the inflammation depend upon a cause which has ceased to be, in course of time symptoms disappear, the adhesions get looser, and may be completely absorbed.

Serous perimetritis. — With adhesive perimetritis, there is often a little exudation of serum. We call the disease serous perimetritis when there is a large encysted effusion of serous fluid.

Suppurative perimetritis.—By a perimetric abscess we mean a large collection of pus.

Adhesive perimetritis.—By the time the disease has lasted a few days the lymph exuded has become organised into fibrous tissue, which thickens the pelvic peritoneum and makes it stiff, so that the uterus becomes fixed. In parametritis lymph is exuded into the cellular tissue. The diagnosis between perimetritis and parametritis is made by the shape and position of the exudation.

Distinction between perimetritis and parametritis.—1. *Perimetritis.*—When the pelvic peritoneum is thickened by inflammation its shape can be felt. Behind, it can be felt dipping down into Douglas's pouch. In front, its higher position prevents it from being felt. At the sides you can feel the induration joining the uterus at about

the level of the os internum, and then sloping off upwards at the sides, so that you cannot follow it as far as the pelvic wall. The size of the swelling behind· the uterus depends upon the nature of the exudation. If the exudation be serous or purulent, there may be a big lump displacing the uterus forwards. You will find, on examining by the rectum, that the lump is between the vagina and rectum. It may flatten the rectum, but it does not surround it. The diagnosis of perimetritis rests upon these anatomical features of the exudation.

2. *Parametritis.*—When inflammatory exudation into the cellular tissue forms a lump behind the uterus, the swelling surrounds the rectum, forming a fixed half-ring of tissue continuous with the pelvic wall. When the cellular tissue at the side of the uterus is affected, the lump extends as low down as the vaginal insertion, and thence seems to slope off. downwards until it blends with the pelvic wall. Inflammation of the cellular tissue in front of the uterus forms a lump interposed between the uterus and bladder, in close contact with the vaginal wall.

<div align="center">BY THE VAGINA</div>

PERIMETRITIS	PARAMETRITIS
	In Front
Lump hardly felt.	Lump close down to vagina, between uterus and bladder.
	At Sides
Induration felt at level of os internum, laterally retreating upwards out of reach.	Induration at level of vaginal insertion, sloping off downwards.

<div align="center">BY THE RECTUM</div>

Swelling in front of rectum.	Swelling extending around rectum back to pelvic wall.

The course of perimetritis.—In most cases the cause is inflammation of the Fallopian tubes. This may be simply catarrhal. In cases of this mild kind the inflammation of the tubal mucous membrane runs its course and ends in recovery, either without closure of the tubes, or at any rate without retention of much secretion in them. These are cases in which perimetritis is the main and apparently the sole morbid condition.

Treatment.—The principles of treatment are the same as in general peritonitis: (1) *Rest in bed*. (2) *Laxatives*. Opium is seldom required for longer than a day or two. As soon as you can leave off opium, give gentle aperients, so that the motions may be soft. (3) *Counter-irritation*. Prescribe small blisters to the lower abdomen, a fresh blister being applied every three days by the side of a former one. (4) *The hot douche*. The hot vaginal douche, used for five or ten minutes night and morning, keeps the vagina clean, and somewhat relieves pain.

Should an operation be done?—In acute perimetritis the abdomen ought not to be opened. If there be a condition present which will delay recovery, and produce recurrence of perimetritis, it will be better to postpone the operation until fever has subsided.

What is serous perimetritis?—Cases in which the serous fluid effused is important by reason of its bulk.

How serous perimetritis is produced.—The lymph that is first effused becomes organised into fibrous adhesions, and then serous fluid is poured out, filling the space bounded by adhesions, and stretching tensely the parts which bound it. The transudation of much serum probably aids, in some way, the struggle of the phagocytes against the microbes.

Special features of serous perimetritis.—Serous perimetritis is important for two reasons. (a) The accumulation of serum above the pelvis leads to diagnostic difficulties ; (b) that in the pelvic cavity — i.e. in Douglas's pouch — causes pressure symptoms.

Diagnosis between serous perimetritis and ovarian cyst.—Serous perimetritis forms a round fluctuating swelling, close to the uterus. Hence serous perimetritis has often been taken for an ovarian cyst, especially if it be above the uterus (Fig. 50).

The points in diagnosis are these : 1. In serous perimetritis the tumour is preceded by symptoms of inflammation. Small ovarian tumours cause neither pain nor fever. 2. The tumour formed by serous perimetritis is fixed ; a small ovarian tumour is movable. 3. The tumour of serous perimetritis

is generally resonant on percussion, while an ovarian tumour is dull.

Complex cases.—Perimetritis may occur in a patient who has an ovarian tumour. In such a complex case operation will generally be indicated. The only other criterion is the effect of treatment. Keep
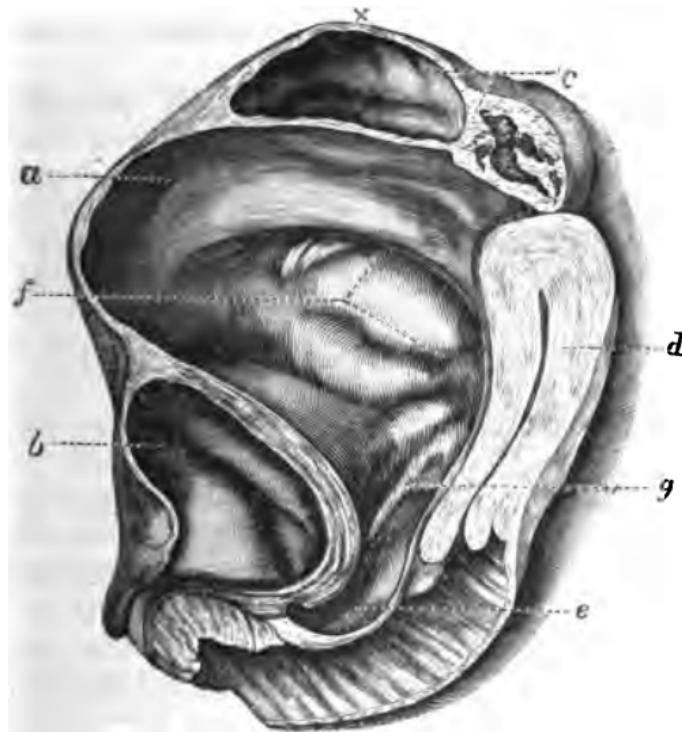
Fig. 50.—Drawing from nature of a perimetric effusion in front of and above uterus. (*By permission of Dr. W. S. A. Griffith.*)

a, Cavity ; *b*, bladder ; *c*, cystic ovary ; *d*, uterus ; *e*, fluid pressing down between uterus and bladder ; *f*, broad ligament ; *g*, ureter ; *x*, point where Fallopian tube was adherent.

the patient in bed. If the tumour be serous perimetritis, at the end of a fortnight it will be softer and smaller.

Diagnosis of serous perimetritis from hæmatocele and from abscess.—The diagnosis

between an intraperitoneal swelling containing *blood* and one containing *serum* is made by the history. Serous perimetritis is preceded by fever and pain ; internal hæmorrhage comes on suddenly with faintness and pallor.

An *abscess* behind the uterus can only be distinguished from serous perimetritis by (*a*) its clinical course, which is that it shows no tendency to absorption ; and (*b*) by puncture.

Pressure symptoms. — Serous perimetritis may cause (*a*) protrusion of the posterior vaginal wall at the vulva ; (*b*) retention of urine ; (*c*) painful and difficult defæcation ; (*d*) elongation of the cervix by stretching over the front of the tumour ; and (*e*) sloughing of parts of the cervix, vagina, or rectum.

Treatment of serous perimetritis. — So long as the tumour is not large enough to cause pressure symptoms, no treatment other than rest in bed is required.

If pressure symptoms are urgent, the size of the tumour must be lessened by removing the fluid. Cut through the posterior vaginal fornix with scissors to an extent enough to admit two fingers, then cautiously make a small hole in the wall of the tumour, and enlarge this by tearing first with one finger, then with two. Thus all fluid and clot can be withdrawn. Pack the cavity loosely with iodoform gauze, letting the end of the gauze hang down in the vagina. Take the gauze out at the end of twenty-four hours.

CHAPTER XVI

PERIMETRIC ABSCESS

What is perimetric abscess? — It means a cavity containing a considerable quantity of pus.

Absorption of pus may take place in the pelvis; but when there is enough pus to be called an abscess, the patient does not get well until the pus has been discharged.

A perimetric abscess begins as a number of little collections of pus and serum, in spaces bounded by adhesions. These spaces increase and coalesce, and thus a big abscess of irregular shape is formed. A globular suppurating cavity within the peritoneum is usually a suppurated cyst.

Causes of perimetric abscess. — Purulent salpingitis, suppuration of the ovary, disintegration or sloughing of uterine fibroids, extension of inflammation from the bowel. Lastly, in many cases the cause is not found out.

Diagnosis of perimetric abscess. — In the beginning the symptoms are those of perimetritis. The patient remains ill for weeks, and when bimanual examination is practicable, a tumour is found. An intraperitoneal abscess can be distinguished from an encysted intraperitoneal collection of serum only by the greater hectic fever and wasting which accompany suppuration.

Ovarian suppuration without fever.— Suppurated ovarian cysts do not always cause fever.

A suppurated ovarian cyst without fever is fixed, and commonly produces pain and slow wasting.

When a small intraperitoneal abscess has formed round a diseased tube or ovary, it is not possible to diagnose the situation of the pus until the belly has been opened. The fact of suppuration is inferred from the persistence of pelvic tumour, pain, and fever.

Clinical course of perimetric abscess.— Fever and wasting continue until the abscess bursts or is opened. An intraperitoneal abscess may burst into the general peritoneal cavity, and set up fatal peritonitis, but this is rare. An intraperitoneal abscess usually bursts into the bowel. When a perimetric abscess has burst into the bowel, the course of the case depends on the cause of the suppuration. If the cause is persistent—such, for instance, as a suppurated ovarian cyst, or an extrauterine sac containing bones*—the abscess cavity will go on discharging indefinitely. When an abscess bursts into the bowel, fæces, as a rule, do not get in. I have known the pressure of an indiarubber tube lead to perforation of bowel in contact with it, and escape of fæces into the abscess cavity.

The pus of a perimetric abscess is sometimes mixed with blood. Often the pus is offensive, especially if the abscess is close to the large bowel.

Treatment of perimetric abscess. — 1. If there is a fixed swelling behind the uterus which we take to be an abscess, matters cannot be made worse by opening it from the vagina, provided this be done with clean hands and instruments. If the attempt to cure by vaginal incision fail, abdominal

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* Suppuration from this cause, although it cannot clinically be distinguished from a perimetric abscess, yet is oftener under the peritoneum, in the cellular tissue, than in the peritoneal cavity.

section can afterwards be done, and as the tumour was adherent before the vaginal incision was made, no difficulty will have been added to the case by that incision.

How to open it.—Put two fingers of the left hand into the vagina. Guided by them, cut with a pair of scissors for about an inch and a half from side to side through the mucous membrane of the posterior vaginal fornix, about halfway between the lowest part of the downward bulging tumour and the cervix uteri. When you have got one finger into the abscess cavity, enlarge the opening by tearing until you can get two fingers in ; explore the cavity, and empty it. Lightly stuff the cavity with iodoform gauze. Free hæmorrhage from an opening in Douglas's pouch is rare. A free opening is better than tapping, because by the latter the cavity can be neither explored nor emptied. By tearing you get free access to the pus collection with less risk of bleeding and of wounding what ought to be avoided, than if an opening of the same size were made with knife or scissors.

2. The lump may be higher up than Douglas's pouch. It is often high up when the inflammation results from puerperal infection, because, if inflammation attack the pelvic peritoneum before the uterus has sunk into the pelvis, the uterine appendages will get fixed in a higher position than that which they occupy in the unimpregnated state, and an abscess around them will be higher up also. The best mode of treatment is by abdominal section.

CHAPTER XVII

SALPINGO - OÖPHORITIS

I have now to describe the conditions which in women commonly bring about peritoneal inflammation, keep it up, and cause it to recur after it has subsided.

Perisalpingo-oöphoritis denotes inflammation of peritoneum, tubes, and ovaries. As clinically we know no salpingo-oöphoritis without inflammation of the adjacent peritoneum, the " peri-" is not needed.

Importance of the causes of perimetritis. —In perimetritis, the inflammation of the peritoneum causes the symptoms ; the morbid states which set up this inflammation cause either no symptoms at all, or symptoms so slight that they are overlooked. If the cause is transient, the inflammatory changes tend with time to bring the parts nearer and nearer to a state of health. If the cause persists, the peritonitis either continues acute, or recurs time after time.

Septic poisoning. —The most common cause of salpingo-oöphoritis is " septic poisoning " after delivery or abortion. Salpingo-oöphoritis generally begins comparatively late in the lying-in period—a week, or even later, after delivery. Septic infection through fresh wounds leads to death before local inflammation has had time to develop.

In most cases in which we can find a cause, the disease can be traced back to childbirth. In some,

the patient gives a history of an acute illness during the lying-in period, and of chronic pain persisting ever since. In others, the patient has got up and believed herself well, and within a few weeks has been taken ill. From one-quarter to one-third of cases of salpingo-oöphoritis arise in this way.

Septic poisoning from maltreatment.— Endometritis, leading to salpingitis, and then to perimetritis, may be produced by the sound, the tent, the curette, the knife, or scissors used without antiseptic precautions; by injections or by caustics. It was often produced by intrauterine pessaries. This may happen in one of two ways : (*a*) The instrument itself may be dirty, or (*b*) the operation may lead to the retention *in utero* of dead tissue or discharge, which offers food for septic microbes.

Operations upon the uterus, if done without care as to cleanliness, may set up endometritis, and thus salpingo-oöphoritis. Perimetritis is an almost invariable accompaniment of the later stages of cancer.

Subperitoneal fibroids of the uterus may undergo degeneration, and at a degenerated and softened spot the peritoneal covering may give way, and the detritus set up perimetritis.

Gonorrhœa.—This disease, which is produced by the gonococcus, sometimes extends to the Fallopian tubes, and from them to the peritoneum.

When gonorrhœa extends to the Fallopian tubes, it does so, as a rule, within two months. It is answerable for about one-fifth of the cases of salpingo-oöphoritis. The frequency with which gonorrhœa causes pelvic peritonitis has been exaggerated.

Tubercle.—Next in frequency among the known causes comes tubercle. About 7 per cent. of cases of chronic inflammation of the Fallopian tubes are due to tubercle. It can only be found out after the tubes have been removed. Tubercular disease of

the Fallopian tubes occurs at all ages, but most fre-
quently during the years of functional activity ;
that is, from twenty to forty. It does not cause
amenorrhœa ; this is only present when there is also
advanced phthisis (Fig. 51).
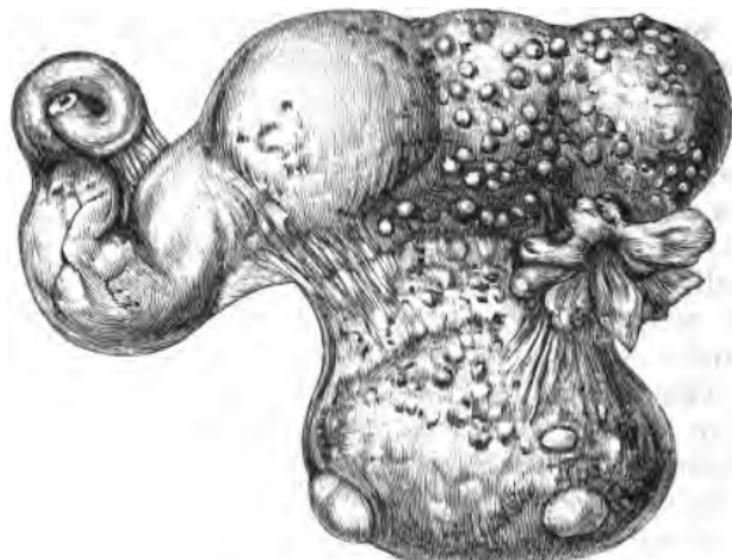
Fig. 51.—Tubercular disease of Fallopian tube and ovary.
(*After Cullingworth.*)

Chill (?).—In some cases perimetritis occurs in
patients in whom everything is consistent with vir-
ginity. Catarrh of the vagina, leading to temporary
leucorrhœa, is common. A chill may probably in-
flame the peritoneum by causing catarrh of the vagina,
uterus, and tubes, which extends to the peritoneum.
The disease of the tubes in these cases is probably
slight. Perimetritis occurring in the virgin is usually
of this kind. Its natural course is to end, under
favourable conditions, in complete recovery.

Bowel infection.—In some cases no cause for
pelvic suppuration can be found other than close
adhesion of the affected part to bowel.

Chronic oöphoritis without fixation.— The term salpingo-oöphoritis includes inflammation not only of the peritoneum and the Fallopian tube, but of the ovary. We know nothing of chronic inflammation of the ovary not attended with fixation.

Oöphoritis with fixation.—Two kinds of oöphoritis occur with chronic inflammation of the tubes and pelvic peritoneum : peri-oöphoritis and abscess of the ovary.

Peri-oöphoritis.—This means inflammation of the peritoneum around the ovary, leading to exudation of lymph around and over the ovary, which becomes organised into adhesions binding it to neighbouring parts.

We know not in what proportion of cases peri-oöphoritis extends to the substance of the ovary, and produces changes in it ; nor upon what such extension depends. We have no evidence that such chronic inflammation of the ovary adds to the symptoms, or modifies the course, of the perimetritis upon which it depends.

ACUTE INFLAMMATION OF THE OVARIES

Two forms of acute oöphoritis have been described.

 1. Parenchymatous or follicular.

 2. Interstitial.

In severe cases both forms exist together.

1. **Parenchymatous or follicular.** — The contents of the follicles become first turbid, then purulent. The epithelium lining the follicle undergoes degeneration.

This disease has been found after death from the acute exanthemata, cholera, relapsing fever, and septicæmia, from poisoning with arsenic or phosphorus. In blood poisoning rapid destruction of epithelial elements is liable to occur in the abdominal

glandular organs, so that follicular oöphoritis is an example of a general pathological fact. It has no special symptoms, and cannot be diagnosed.

2. **Interstitial oöphoritis.**—Three forms or degrees are described. (*a*) *Serous*, in which the ovary is large, soft, œdematous. (*b*) *Suppurative* or *hæmorrhagic*, in which there are lines of suppuration running from the hilus, small abscesses, or capillary hæmorrhages. (*c*) *Necrotic*. In these the whole organ is broken down into a pulp, its structure being no longer recognisable.

Between the slighter forms of inflammation (*a*) and changes supposed to result from them, on the one hand, and physiological changes on the other, it is very difficult to draw the line.

The two latter forms (*b*) (*c*) are consequences of septicæmia or pyæmia ; and when patients have died rapidly from one of these diseases, and the ovary has been found swollen and vascular, it has been supposed that an early stage of interstitial oöphoritis was present.

In puerperal septicæmia, oöphoritis with suppuration is frequent. The inflammation is generally bilateral. In such cases the abscess in the ovary is only one of the results of the infection of the circulation by virulent microbes.

Acute puerperal abscess of the ovary.—Abscess of the ovary may be a part of parametritis, the inflammation spreading along the broad ligament to the hilus of the ovary.* It may arise by extension of inflammation from a suppurated tube.† Ovarian dermoids are prone to suppurate, as a result of bruising during delivery. Most cases of suppurated ovaries following delivery are, in my opinion,

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* *See* Lewers, *Obst. Trans.*, vol. xxx., and Targett, *Obst. Trans.*, vol. xxxvii.

† *See* Cullingworth, *Obst. Trans.*, vol. xxxvi.

suppurated cysts. Such a suppurated ovary can only be diagnosed as a perimetric abscess.

Clinical aspect of salpingo-oöphoritis.—Oöphoritis is always associated either with pelvic peritonitis or pelvic cellulitis, and often with inflammation of the tubes. Distension of the tubes is always associated with perimetritis, for it cannot occur unless the orifice of the tube is closed. The most common condition is that described by the term " *in-*
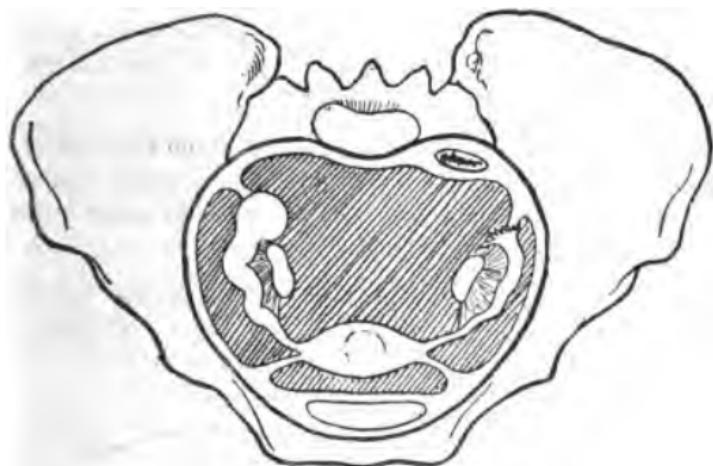

Fig. 52.—Diagram illustrating salpingitis; right tube thickened and closed. (*After Martin.*)

flammation of the uterine appendages," or " *salpingo-oöphoritis.*"

Inflammation of the tubes without peritonitis.—Acute suppurative salpingitis, leading to peritonitis, has never yet been diagnosed until the peritonitis had begun.

Salpingo-oöphoritis.—When adhesions bind together the tube, ovary, and adjacent peritoneum, these parts form a lump, the component parts of which cannot be distinguished without opening the abdomen (Figs. 52, 53, 54). Inflammation of the
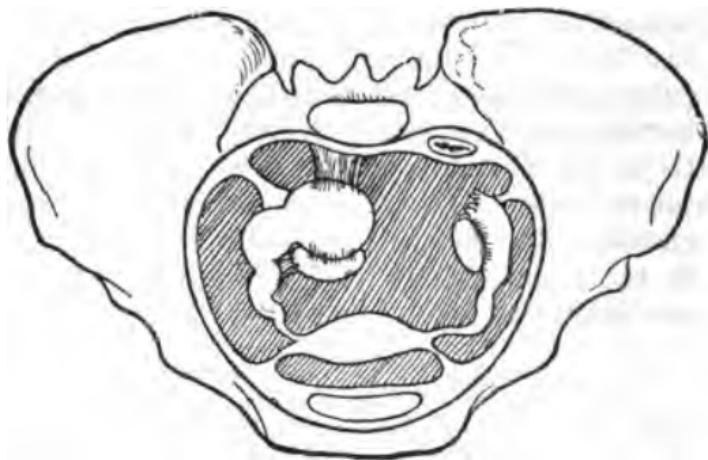
Fig. 53.—Diagram illustrating salpingitis; right tube thickened, dilated, lengthened, tortuous, adherent to ovary and pelvic wall; left tube thickened and adherent to ovary. (*After Martin.*)

tube may be of three kinds: 1. *Simple catarrhal inflammation ;* 2. *Inflammation with thickening ;* 3. *Inflammation with dilatation.*
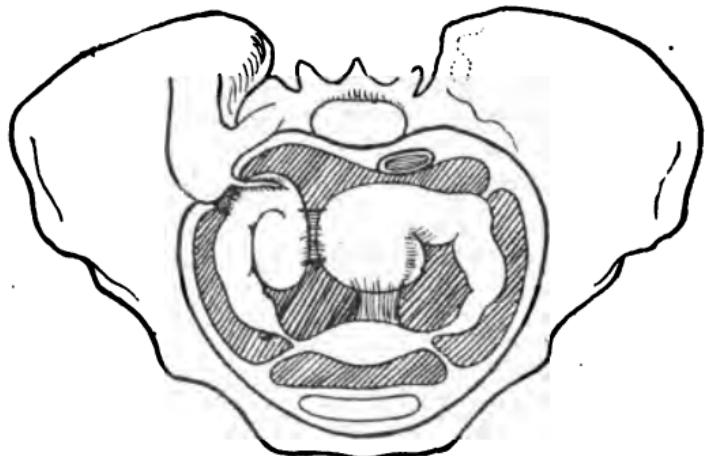

Fig. 54.—Diagram illustrating salpingitis; both tubes thickened, closed, tortuous, adherent to one another, to uterus and to pelvic wall. (*After Martin.*)

1. **Catarrhal salpingitis.**—This is inflammation due to a transient cause. The pelvic peritonitis is of short duration, and ends in complete recovery.

2. **Salpingitis with thickening.** — The second group of cases comprises thcse in which the inflammation persists long and recurs, producing great thickening of the tube, but not great dilatation. The thickening may affect (*a*) the fibro-muscular wall ; (*b*) the mucous membrane.

(*a*) This has been given the name of *pachysalpingitis*. Another name is *myosalpingitis productiva*. The wall may be at some places half an inch thick. This thickening is due to fibrous tissue. The tube is tortuous, and fixed by adhesions ; saccular dilatations may be present in it. The size of the tumour formed by the diseased tube is principally due to the thickening of the wall. It is not distended.

(*b*) The mucous membrane is overgrown, thickened, œdematous, injected so as to be purple in colour, and ecchymosed, or, it may be, slate-coloured. I have seen calcareous plates and nodules in the mucous membrane. In some cases there has been overgrowth of gland tissue. The process is like the formation of an erosion in the cervix. We know of no essential difference between cases in which such overgrowth of mucous membrane is conspicuous and those in which it is not ; the difference is one of degree only. The ovary is generally enlarged.

3. **Inflammation with dilatation.** — The third group of cases comprises those in which the tumour formed by the diseased appendages is mainly due to a distinct cavity or cavities containing serous fluid, pus, or blood. These are called hydrosalpinx, pyosalpinx, and hæmatosalpinx, respectively ; but clinically they must be grouped together under the name of *cystic salpingo-oöphoritis.* Another name is *sactosalpingitis.*

Pyosalpinx.—Pyosalpinx is the most important, because it may kill by setting up peritonitis. The tubes may become closed in two ways: (1) by
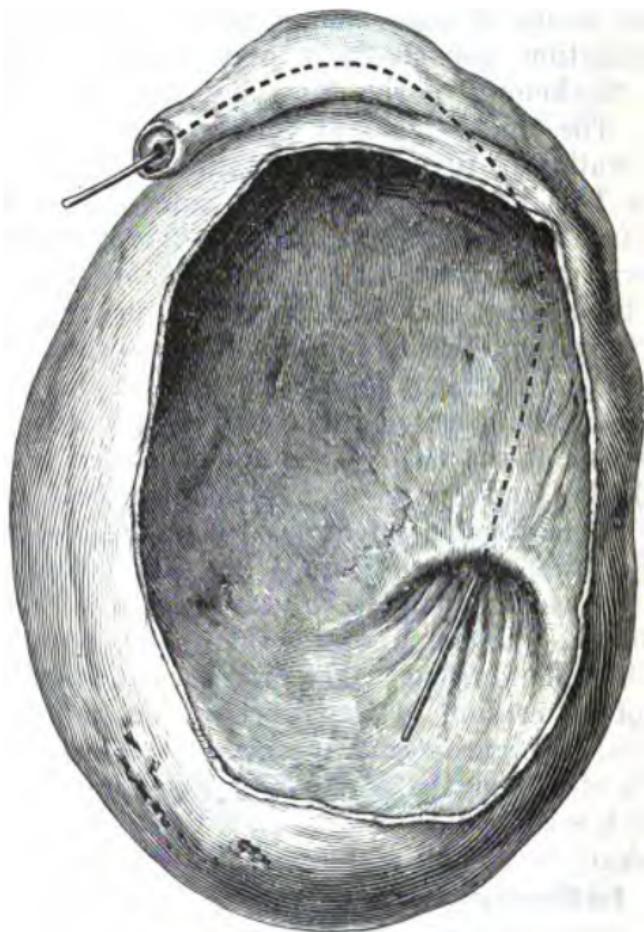
Fig. 55.—Large pyosalpinx. (*After Cullingworth.*)

peritoneal adhesions forming around the fimbriated end; (2) by swelling of the submucous tissues bulging over and closing in the fimbriæ.

The dilatation of the tube into a cyst is the final stage of salpingitis. The tumour formed by a dilated

tube is seldom larger than a pear, although I have
seen a pyosalpinx reaching to the umbilicus (Fig.
55).   The tube is commonly contorted, winding round
the upper and back part of the ovary, the outer part
of the tube being the more dilated.   The wall is gener-
ally thickened, but at one or more spots it may be
thinned.   The thinning is not due to tension, but to
ulceration, and this ulceration may take place at
a part where the tube is not dilated, and may per-

Fig. 56.—Hydrosalpinx.   (*After Cullingworth.*)

forate and cause death.   The mucous membrane shows
the appearances described under pachysalpingitis,
except that the inflammation being more severe the
mucous membrane is infiltrated with leucocytes.

. What may be called a cold abscess of the tube is
sometimes seen ; that is, a tube full of inspissated
pus, but presenting no sign of acute inflammation.

Hydrosalpinx.—The tube is thinned, so that
its wall is translucent.   Adhesions are usually thin
and few (Figs. 56, 57).   Dr. Clement White* has

* *Journal of Obstetrics and Gynæcology of the British Empire,*
March, 1903.

brought forward reasons for thinking that hydrosalpinx is often due to retention of secretion owing to congenital closure of the fimbriated end. Clinically it resembles a small ovarian cyst, but is attended with more pain. A hydrosalpinx is seldom much larger than an orange.

Fig. 57.—Hydrosalpinx. (*After Cullingworth.*)

Hæmatosalpinx.—The most common cause of hæmatosalpinx is tubal gestation. Healthy Fallopian tubes in patients who are menstruating contain a mixture of mucus and blood ; but such bleeding, in a healthy state of the tubes, leads not to their dilatation.

Ovarian hydrocele.—The ovary normally lies in a recess behind the broad ligament. The fimbriated end of the tube falls over the mouth of this recess. When adhesions form around the end of the tube and the ovary, this sac is very apt to get shut off, and converted into a cyst into which the tube opens. Such a cyst may contain serous fluid, and this fluid may escape into the uterus by the Fallopian tube.

Symptoms.—Salpingo-oöphoritis cannot be di-

agnosed without examination. All the symptoms may be caused by other diseases. Sometimes there are no symptoms. But this is exceptional.

There is *pain*, referred principally to the lower abdomen, lessened slightly by lying down. It is aggravated by exertion, by defæcation, and by sexual intercourse, in the latter case the pain lasting an hour or two, it may be, after the act.

Menstruation is generally profuse, irregular, and painful.

Frequent micturition and pain in micturition are common.

There is often pain in defæcation.

The presence of persistent pain and anxiety causes the general health to suffer, leads to loss of appetite, nausea, flatulence, constipation. Prolonged pain and anxiety interfere with sleep, and thus the symptoms of neurasthenia become combined with the local ones. There is usually wasting, but not great emaciation. There may be fever, but a normal temperature does not exclude suppuration. If the tubes on both sides are closed, there is sterility.

Diagnosis.—To make a closer diagnosis than that there is pelvic peritonitis you must wait until bimanual examination is possible.

When you are able to examine bimanually, you may find that the uterus is the only lump that can be grasped between the hands ; and that on each side of the uterus there is nothing but thickening and stiffening of the parts. If this is the condition, with time and rest complete recovery will take place.

You may find that there is a lump behind and at the side of the uterus, either on one or both sides. If the lump be no bigger than a large walnut, pachysalpingitis may be the morbid change. If it be larger than this, and after a month's expectant treatment neither has the tumour got smaller nor have the

symptoms improved, there is probably a collection of pus. The suppuration is in the tube twice as often as in the ovary. In some cases it is in both, and in some in the peritoneum around (Fig. 58). Tubal inflammation is generally bilateral. If there is a large tumour on one side only, it is probably a diseased ovary.

Fig. 58.—Showing suppurated ovary associated with salpingitis. (*After Cullingworth.*)

Difficulties in diagnosis.—1. A *fibroid* may be difficult to tell from a lump due to inflammation of the appendages. Distinguish by (*a*) the greater hardness of the fibroid ; (*b*) its oneness with the uterus.

2. *A cyst in the broad ligament*, with pelvic peritonitis, may be indistinguishable from salpingo-oöphoritis. The mistake is not important, for the removal of such tumours is the proper treatment.

3. *Intraperitoneal hæmatocele.* — Intraperitoneal bleeding is usually preceded by some symptoms of early pregnancy ; it comes on with sudden pain and faintness, and with it there is usually hæmorrhage by the vagina.

4. *Malignant disease of the ovaries* at a certain stage of its growth forms lumps feeling like inflamed uterine appendages. If the case is watched, the tumour will be found to grow fast.

5. *Cancer of the Fallopian tube.*—This may be either primary or secondary. In a case of cancer of the uterine body, in which the uterus is so movable that its extirpation seems practicable, if there be any thickening of the Fallopian tubes, the uterine appendages should be removed along with the uterus.

6. *Primary cancer of the Fallopian tube* is very rare. Its diagnosis is very difficult. If, when a subject of chronic salpingo-oöphoritis gets to the menopause, there comes an aggravation of the symptoms —increase of pain, wasting, and watery or sanious discharge—cancer of the tube may be suspected. The removal of the diseased tube, the uterus, and the opposite tube is the only treatment.

7. *Unilateral hæmatometra* cannot be clinically distinguished from salpingo-oöphoritis.

8. *Myoma of the Fallopian tube* is very rare. I know of no case in which such a tumour has caused enough trouble to warrant abdominal section.

9. *Rare cysts of the tube.*—The "*hydatid of Morgagni*" is the remains of the blind end of the duct of Müller. This cyst may be pathologically enlarged.

10. *Sarcoma of the tube.*—Sarcoma of the tube is very rare; at present it cannot be diagnosed. Two cases of *chorion-epithelioma* following tubal pregnancy have been described.

Prognosis.—When a tender fixed lump is felt in a posterior quarter of the pelvis, you cannot at the outset tell whether there is pus or not; whether the pus, if present, is in the ovary, or tube, or the peritoneum around them. You must consider the different events that may happen, for prognosis governs treatment. Six terminations are possible:

1. *Perforation.*—Perforation is rare in chronic cases ; the tubes are thickened and surrounded by adhesions, which, if the tube should be perforated, shut off inflammatory products from the general peritoneal cavity. Perforation is not bursting from over-stretching. It occurs by ulceration in acute cases : often the existence of a morbid process in the Fallopian tube was not even suspected.

2. *Lardaceous disease.*—The lump may be an abscess, which may burst into the bowel, or bladder, or vagina, and then go on discharging indefinitely, and ultimately produce lardaceous disease. It is rare, but it is a possibility.

3. *Absorption.*—The bulk of the lump may be serous exudation, the tubes and ovaries being very little diseased. If this be the morbid condition, then if the patient be placed under favourable conditions, the serum will in time be absorbed, congestion and œdema will subside, and adhesions will get looser and thinner ; the lump will get smaller, softer, less definite, and at length no lump will be felt. These cases are commoner than those which lead to the two previously described terminations.

4. *Disappearance of symptoms, but not of lump.*— When there is great thickening of the tube, with dense adhesions, if the patient is put under favourable conditions, the pain will gradually get better and may at length cease altogether. A hard lump may be felt beside the uterus for years afterwards, and the patient remain well for the rest of her life. This is a frequent termination. If the lump is on one side only she may become pregnant. If so, pregnancy will make adhesions become looser and softer, so that the lump may neither cause abortion nor hinder delivery.

5. *Recurrence.*—Often the patient gets well under treatment. But the damaged parts are more apt to

become inflamed again from slight causes than they were before the illness. This is the most frequent course.

6. *Persistence.*—In some cases the symptoms persist until the disease is cured by operation.

The essential point in the diagnosis of these cases lies in the distinction between perimetritis with enough serous exudation to form a tumour, but without chronic disease of the tubes, and perimetritis with chronic salpingo-oöphoritis. We cannot do this without watching the effect of expectant treatment.

Expectant treatment.—The essential of expectant treatment is *rest.* Success in avoiding operation will depend on persistence in this. Insist on bed. Use counter-irritation, give laxatives, advise a hot douche. Avoid vaginal manipulations. Give tonics. If the patient is restless at night, lessen nervous irritability by giving gr. x. or gr. xv. of sodium bromide three times daily, not continued for longer than two or three weeks. Avoid hypnotics. These things are mere trifles in comparison with *rest.*

Result of expectant treatment.—In nearly all cases improvement will follow this treatment. Many who recover will relapse ; but, as a rule, the relapse will not be so bad as the first attack, and similar treatment will again cure them. In a few cases, prolonged expectant treatment does not relieve ; in a few others relapse occurs.

What is a fair trial of expectant treatment?— Most cases will get well within two months. If a large lump is not smaller at the end of a month's expectant treatment, it may be assumed that longer treatment will not remove it. If the lump diminishes in size, or if it be so small that it is difficult to be certain as to variation in size, wait. If at the end of three months' treatment the lump is small, nutrition

not affected, and the only indication for different treatment is pain, the pain is probably neurotic.

Surgical treatment.—If expectant treatment fail, surgical treatment is required.   There are two routes by which the diseased parts may be reached : (1) the abdominal, (2) the vaginal.   These diseases were practically discovered by abdominal section. They were looked on as museum curiosities, until Lawson Tait, by abdominal section in the living, demonstrated their frequency, and showed that they could be cured.   The mode of cure which Tait introduced is :—

1. **The removal by abdominal section of the ovaries and tubes.**—This is sometimes called " spaying " ; but spaying means the removal of healthy ovaries.

The objections are : (1) **The danger to life.** This is slight when the operation is done by a skilful operator ; but when done by an inexperienced operator, the danger is considerable.   In the worst cases it is worth the patient's while to run the risk.

(2) **Does it cure pain ?**—The operation cures painful disease, but it does not at once cure pain. Neurasthenic or hysterical pain is not permanently relieved by any operation.

(3) **Does inflammation never recur ?**— Some patients come back months or years after successful abdominal operations with abscesses or inflammatory induration round a ligature.

(4) **Ventral hernia** may develop years after the operation.   When such a hernia has begun it tends to increase.   Hernias of this kind, if treated while the gap is small, can be cured.

(5) **Sinus formation.**—When a ligature is put round a stump thickened by organised fibrous tissue, it is sometimes not encapsuled, suppuration takes place round it, and a sinus forms which goes on sup-

purating until the ligature has ulcerated through the stump and been discharged. Its separation takes months, and may take years.

(6) **Does salpingo-oöphoritis unsex the patient?**—One objection to extirpation of the tubes and ovaries is that it annuls the sexual functions. It is said that the patient is "unsexed" by her disease, which often produces dyspareunia and sterility. But sexual desire and enjoyment may persist. In one case, in which I removed a pyo-salpinx on one side, and on the other side found the tube and ovary so embedded in adhesions that I could not identify them, the patient had a child within a year after the operation.

The operation.—The instruments and preparations required are the same as for ovariotomy, except that a trocar is not needed. The patient should be in the raised-pelvis position. Details which are common to this and other abdominal sections I shall give in describing ovariotomy.

. Open the belly as in ovariotomy, making the first incision only about two and a half or three inches long. This done, pass two fingers down into the pelvis, and feel for the fundus uteri. This identified, trace outwards with the fingers the uterine appendages, and break down with the fingers the adhesions fixing them. When you have freed them, pull them up to and out through the wound ; transfix and tie the broad ligament in the same way as the pedicle of an ovarian tumour ; and then cut away the diseased appendages as near to the ligature as is compatible with security against slipping of the ligature.

Its dangers.—The dangers of the operation are : i. *Septic poisoning.* This is preventable (*a*) by antiseptic precautions, (*b*) by care not to damage the peritoneum unnecessarily, and not to leave behind in it fluid in which micro-organisms may find

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a soil suitable for their growth. ii. *Hæmorrhage.*
This may be (*a*) from the pedicle ; (*b*) from torn
adhesions. (*a*) Serious bleeding from the pedicle is
not common. The pedicle contains no vessels so
large as those in that of an ovarian cyst; but it is
sometimes friable, so that a thin ligature tightly
pulled may cut through it instead of compressing it.
(*b*) Hæmorrhage from torn adhesions is sometimes
great. It is to be stopped, first, by looking for the
bleeding-point, which in the raised pelvis position
can be seen, and securing it if possible with pressure
forceps and ligatures. But sometimes the bleeding
is from innumerable small points, and the tissue
which bleeds is so firm that these points cannot be
picked up. Such general oozing may be checked
either by applying styptics, such as perchloride or
sulphate of iron, or by pressure—stuffing the pelvis
as tightly as possible with iodoform gauze. I think
the latter the more effective. iii. *Injuries to viscera.*
Bowel may be torn. If a drainage-tube be put
in, so that fæces can come up through the wound,
the patient may do well and the rent heal ; for fæces,
though irritating to the peritoneum, are not septic.
The tear is generally low down, and the bowel fixed
by adhesions, and if so to sew it up is impracticable.
iv. *Intestinal obstruction.* After an operation of this
kind, a kink in the bowel may get fixed and intes-
tinal obstruction follow.

What should be removed?—Lawson Tait
urged that the appendages on both sides should always
be removed ; for if on one side they appear to be
healthy, it is probable that in time they will suffer.
It is urged also that ovaries as well as tubes should be
always removed, because there may be suppuration
in them as well as in the tubes. But it is possible to
cut open the ovary, see if there be suppuration in it,
and, if not, sew the cut surfaces together. It seems

to me sounder surgery to remove diseased parts only,
and leave healthy parts.

**Abdominal section with conservation of
diseased parts.**—Inflamed uterine appendages
have been treated by opening the belly, treating the
morbid condition in the way that seems most likely
to put it right, and shutting up the abdomen. Thus,
if the tubes are adherent, the adhesions are broken
down. If the tube is closed, it is opened, emptied,
and then scraped and cauterised, or part of it removed.
If the ovary contains small cysts, these are cauterised.

Such treatment is only suitable for cases of slight
disease. I know of no evidence that this conservative
treatment cures slight disease any better than treat-
ment which is free from the disadvantages of ab-
dominal section.

2. **Vaginal treatment.**—This mode of treat-
ment leaves no scar in the abdominal wall ; and entails
no risk of ventral hernia, or a sinus in the abdomen.
There is less danger of general peritonitis, intestinal
paralysis, and obstruction, because, in properly
chosen cases, the general peritoneal cavity is not
opened. The drawbacks to it are that you cannot
tell what you are dealing with so well as when the
parts are exposed by an abdominal incision. There
are three methods of vaginal operation.

(*a*) **Vaginal incision.**—The cases for this
method are chronic cases in which there is a painful
lump, the size of a Tangerine orange, or larger, fixed
in Douglas's pouch. It should not be done in recently
formed lumps, because (i.) most such lumps will go
away without it ; and (ii.) a recent lump may not be
firmly adherent, and if so, the general peritoneal
cavity may be opened. When the mass is already
firmly adherent in Douglas's pouch, an incision into
it will not make the condition worse. A vaginal
incision should not be made when the lump is high up

and at the side, for in such cases large vessels in the broad ligament will be cut into if the lump is attacked from the vagina.

Therefore, when you have to deal with such a painful lump, which after sufficient expectant treatment has not lessened in size, cut into it by the vagina in the manner described in the chapter on perimetric abscess. If the lump is a pyosalpinx, or if it is a dermoid cyst, or an abscess in the peritoneum around inflamed appendages, it will be cured in this way.

Sometimes you will be able to lay open one cavity, but find this bounded by a wall which does not seem the outer boundary of the lump, but which is so firm that you cannot break it down. If you repeat the attempt a few weeks later, you will often find the wall of the remaining pus cavity so much nearer and so softened that you can open it by the vagina, and cure the patient.

(*b*) **Removal of the uterus by the vagina.** —Parisian surgeons have advocated and practised removal of the uterus to cure suppuration around it. They urge that by removing the uterus a large gap is left between the suppurating cavities into which they can freely discharge, and which will not close up in a hurry. I find it possible to open collections of pus in the pelvis, and drain them by the vagina, without removing the uterus.

(*c*) **Removal of inflamed appendages by anterior colpotomy.**—If the inflamed lumps are small, they may be removed by opening the vesico-uterine pouch of peritoneum, and then with the finger breaking down the adhesions fixing the appendages, pulling these forwards through the vaginal incision, and removing them.

Removal of the uterus and its appendages by the vagina.—When chronic salpingo-

oöphoritis causes such suffering as to affect the general
health, and is not cured by medical treatment, the
best course is the removal by the vagina of the uterus
and its appendages. If the tubes and ovaries are
removed, the uterus is a useless organ, and inflamma-
tion may recur in the stump of the tubes.

The operation. — I shall describe vaginal
hysterectomy in detail in speaking of cancer. The
first steps of the operation are the same as in hysterec-
tomy for cancer. The next thing is, with two fingers
passed up behind the uterus, to break down adhesions
and liberate the uterine appendages. When this has
been done, the uterine arteries are secured. The
cervix uteri is then freed laterally ; the uterus is
pulled down ; its anterior wall is bisected, and the
uterus is pulled outside the vulva. Then, with two
fingers passed up between the appendages and the
pelvic wall, the appendages can be pressed towards
the middle line and the broad ligament tied externally
to them. The uterine vessels may be secured with
pressure forceps, but ligatures are better. Then the
uterus and its appendages can be cut away. The
after-treatment is the same as that of hysterectomy
for cancer.

This method is not suitable in cases in which the
inflamed appendages form a swelling so large that its
farthest part cannot be reached by the fingers in the
vagina.

Proliferating salpingitis.—In tubes long
inflamed, new growth sometimes occurs in the mucous
membrane. Our knowledge of such growths in the
tubes is recent. The mucous membrane of the
normal Fallopian tube is folded. A mucous gland
is nothing but an involution of epithelium. It is
not possible to define what depth of epithelial in-
volution ought to be called a gland. In chronically
inflamed tubes these folds have been seen much

exaggerated, the processes separating the recesses being longer and more branched than normal, but covered with well-formed columnar epithelium. If the tube is a large gland, these reduplications of gland tissue are rightly called *adenomatous* growths. But if the tube is not a gland, then the correct name for the growths which fill it is *papilloma.*

Follicular salpingitis.—When this papillary or adenomatous growth has reached a high development, adjacent papillæ often adhere, and thus closed spaces or follicles are developed. This has been called " follicular salpingitis." The cases in which such follicular spaces are produced have no clinical peculiarity.

Papilloma of the tube with ascites.— There are rare cases, first described by Mr. Alban Doran, in which papillary growths in the Fallopian tube cause ascites. The clinical features of such cases are that there is ascites cured by the removal of the diseased tube. Papilloma of the Fallopian tube is not the only tumour which can cause ascites otherwise than by its bulk. With fibroma and with sarcoma of the ovary there is often ascites.

Correct diagnosis and treatment will follow if the clinical rule be acted on—never to put a trocar into an abdominal collection of fluid of uncertain origin and nature.

Salpingo-oöphoritis and the appendix.— The appendix vermiformis often lies near the right ovary and tube. For this reason, when there is peritonitis on the right side of the pelvis the appendix is often involved.

CHAPTER XVIII

PARAMETRITIS

What is parametritis? — Parametritis means inflammation of the cellular tissue of the pelvis, having its origin in the genital passage. Before the coinage of the word *parametritis* by Virchow, the disease was known as "*pelvic cellulitis.*"

Distribution of the pelvic cellular tissue. —The cellular tissue fills the lower part of the pelvic cavity, except where the three canals—urethra, vagina, and rectum—perforate it. Above it is covered in by the peritoneum. At the sides it is continuous with the subserous connective tissue. Through the inguinal and femoral canals it is continuous with the cellular tissue of the thighs, and through each sciatic notch with that of the buttock.

The muscles of the pelvic floor. — The central point of the muscular system of the pelvic floor is the sphincter ani and perineum. From this part muscular tissue spreads out on each side like a fan (Fig. 59). The muscles of the pelvic floor consist of (*a*) some comparatively unimportant prolongations of the uterine muscular fibre ; (*b*) the levator ani ; (*c*) some small perineal muscles. The levator ani is the chief one, and it forms a plane running upwards and outwards on each side, so that below it, between it and the pelvic wall, is a space, the ischio-rectal fossa, filled with cellular tissue.

Distinction between the pelvic and vulvar connective tissue. — The muscles are

enclosed in layers of fascia. That which covers the levator ani is called the *deep pelvic fascia*, and
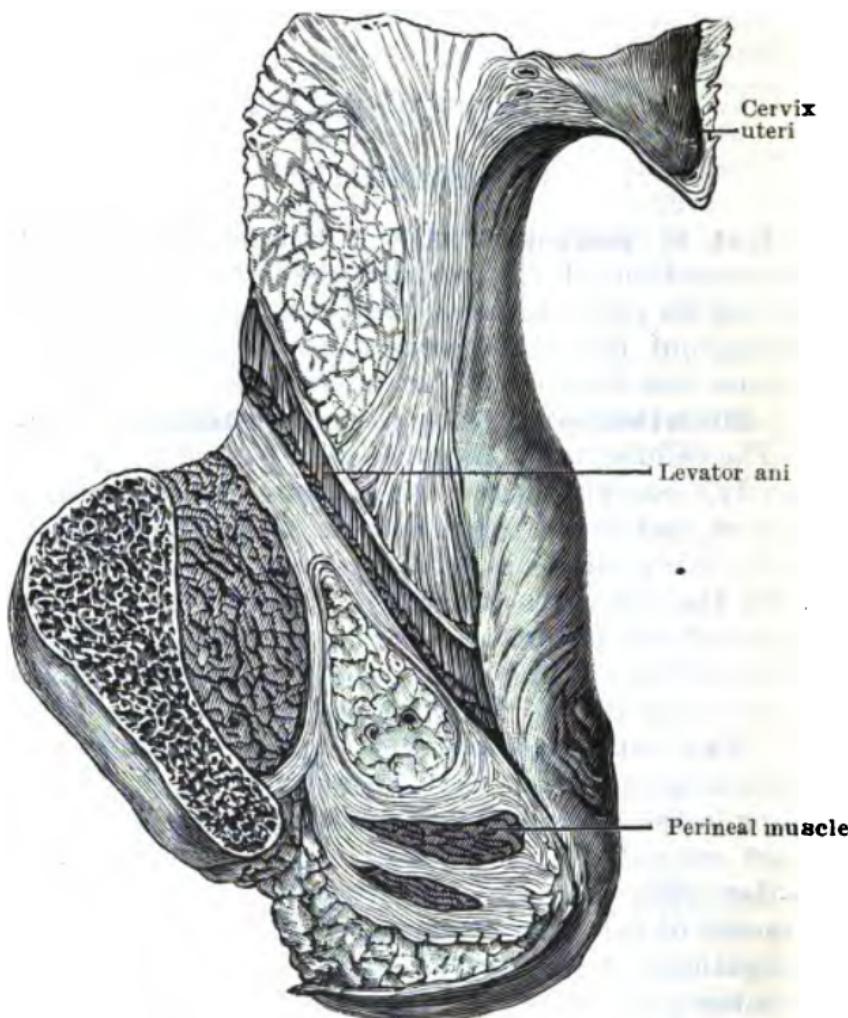

Fig. 59.—Muscular structure of pelvic floor. (*After Freund.*)

forms a fibro-muscular diaphragm, which separates the *pelvic* from the *vulvar* connective tissue. Hence parametritis never, except where there has been injury to this fascia, spreads into the labia or into

the ischio-rectal fossa. Nor does bleeding into the
pelvic cellular tissue thus extend.

The pelvic cellular tissue (Fig. 60).—
Cellular tissue surrounds the uterus. It is close in
texture, white and glistening in section. Behind and
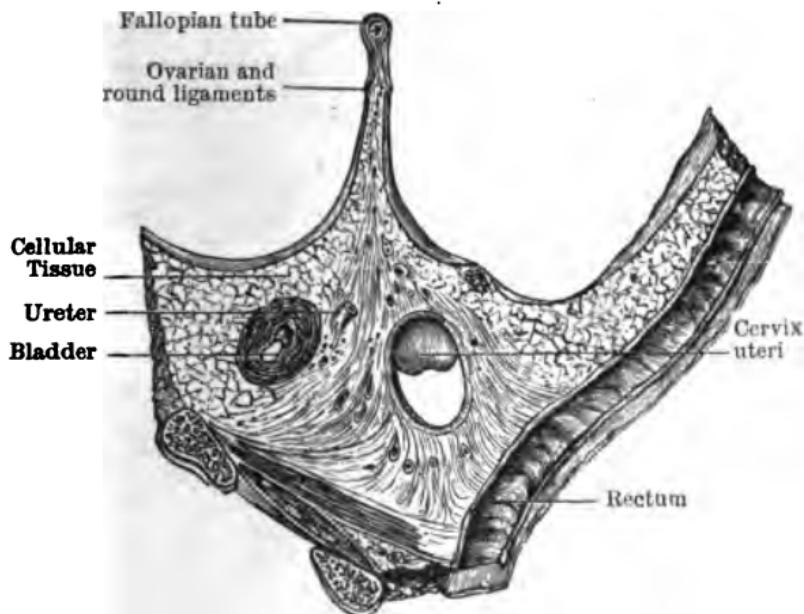
Fig. 60.—Section from before backwards, showing cellular
tissue in broad ligaments. (*After Freund.*)

in front of it the cellular tissue is comparatively
scanty. There is more in front than behind.

**Difference between the pregnant and the
non-pregnant state.***— During pregnancy the
peritoneum is lifted up, so that at the end of preg-
nancy it leaves the uterus about an inch and a half
above the pelvic brim. Hence behind Poupart's liga-
ment there is much loose cellular tissue which is not
there in the unimpregnated state, and which is con-
tinuous with the cellular tissue at the sides of the

* *See* Barbour, "The Anatomy of Labour." Edinburgh, 1889.
  G*

uterus (Fig. 62). Upon this alteration depends a difference between the course of parametritis occurring after delivery and parametritis occurring in a patient not recently pregnant. In parametritis after delivery the inflammation usually spreads into the
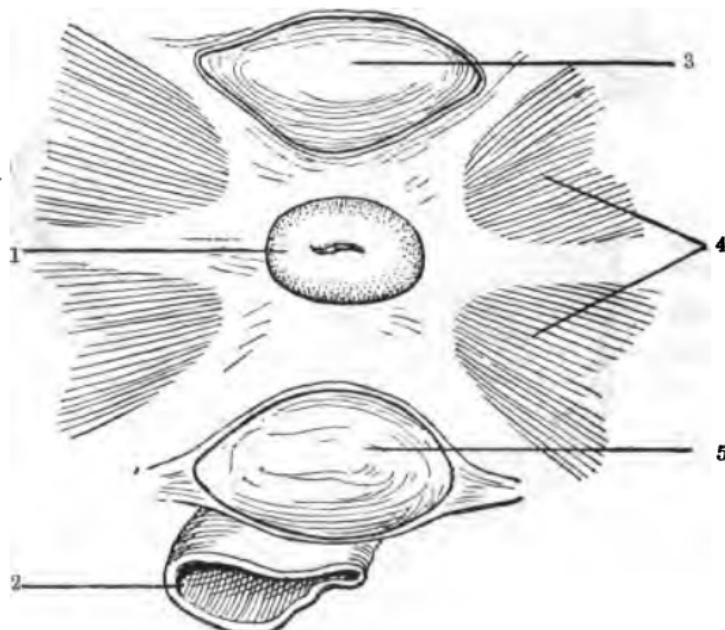

Fig. 61.—Horizontal section of pelvis at level of internal os, showing arrangement of cellular tissue. (*After Freund.*)

1, Cervix uteri ; 2, rectum ; 3, vesico-uterine peritoneum ; 4, cellular tissue ; 5, pouch of Douglas.

loose cellular tissue above the pelvic brim, and forms a swelling in the groin above Poupart's ligament.

The causes of parametritis.—No one has shown that there is any particular injury which makes women who have sustained it more likely to have parametritis than those who have not had the injury. Nor is there any peculiarity in labour, or in childbed, or in their management, or (cases dependent on tubercle or cancer being excepted) in the health of the patient,

which has been shown to be associated with any greater frequency of parametritis. Most cases of parametritis in non-puerperal patients come from injury to the cervix. Cancer, either of uterus, ovary,
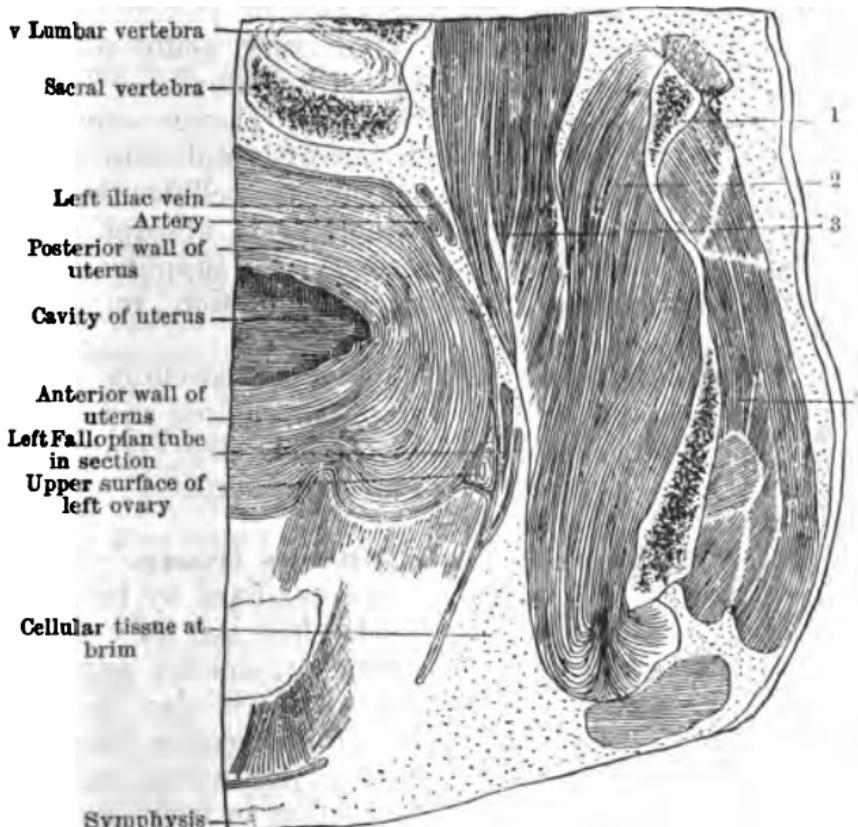

Fig. 62.—Section above brim of pelvis, showing cellular tissue above Poupart's ligament, continuous with that by the side of uterus. (*After Barbour.*)

1, Left iliac crest; 2, iliacus; 3, psoas; 4, gluteus maximus.

or bowel, may grow into and inflame the cellular tissue. Abscess in the cellular tissue may be caused by the tubercle bacillus.

In some rare cases there has been neither preg-

nancy nor operative treatment, nor is there any evidence of cancer or tubercle, and the patient has every sign of virginity.   In such cases the patients often blame " catching cold."   Parametritis from catching cold is parametritis the cause of which has not been found out.   In the common cases of parametritis there is no perimetritis.*   But very acute parametritis usually involves the peritoneum.

Morbid anatomy.—The first change appreciable by examination is effusion of lymph into the broad ligament.   The effusion into the cellular tissue undergoes one of three changes : (1) absorption ; (2) organisation into fibrous tissue ; (3) suppuration. These terminations of the inflammation require separate consideration.

1. **Absorption.**—Fever, pain, and swelling last a few days, and then the symptoms subside and the swelling gradually shrinks.   This is the common ending of the slighter cases of puerperal parametritis.

2. **Organisation into fibrous tissue.**—The uterus and top of the vagina become fixed by beams of fibrous tissue as hard as wood, which last for years, although with lapse of time they get smaller, softer, and permit more movement.   The cellular tissue which goes back on each side of the rectum forms, when thus indurated, a half-ring, just within reach of the finger, surrounding the rectum in front going back to the sacrum on each side of it, and feeling as if one with the bone.   This narrows the rectum, but not to an extent enough to cause obstruction unless the bowels are very costive.   This half-ring is characteristic of effusion into the *cellular tissue*, and is not produced by effusion into Douglas's pouch.

3. **Suppuration.** — The   abscess   cavity   is

* *See* a paper by Noble, *American Gynecological and Obstetrical Journal*, Jan., 1895.

bounded by a dense, fibrous wall, outside which there
is slight œdema.

Usual kinds of parametritis.—There is one
form of parametritis after delivery commoner than
all the rest put together. In parametritis indepen-
dent of pregnancy, there is also one form commoner
than any other. I shall describe these common
forms first, then the rarer varieties.

THE COMMON FORM OF PUERPERAL PARAMETRITIS :
ILIAC, OR INGUINAL PARAMETRITIS *

Symptoms.—This disease comes on in most
cases within a week after delivery. It begins in about
one-fourth of cases with a rigor, followed by febrile
symptoms, and pain in the lower belly on the side
affected. A common history is that the patient got
up at the usual time, but that after being up a day
or two she had to go to bed again. Pain is almost
always present.

Physical signs.—In a day or two, on examin-
ation by the vagina, you feel fulness on one side of the
uterus ; and this fulness gets larger and firmer (Fig.
63). It spreads outwards and forwards into the place
where the lifting up of the peritoneum during preg-
nancy has made the cellular tissue looser than in
the non-pregnant condition (Fig. 62). Hence comes
swelling, to be felt by abdominal examination. At
the height of the disease you find fever, pelvic pain,
and a tender swelling on one side, above Poupart's
ligament (Fig. 64). This swelling is fixed. Its high-
est point is on a level with the iliac crest; it slopes
downwards till it seems to blend with the pelvic wall
about half an inch beyond the middle line. The
swelling hardly ever exceeds these limits or deviates

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* *See* a Clinical Lecture by the Author, *British Medical
Journal*, May 26, 1900, p. 1273.

from this shape. The swelling is produced by effusion of lymph into the cellular tissue between the transversalis fascia and the peritoneum (Fig. 65). The reason of its definite shape and size is that its upper boundary is the line of firm attachment of the
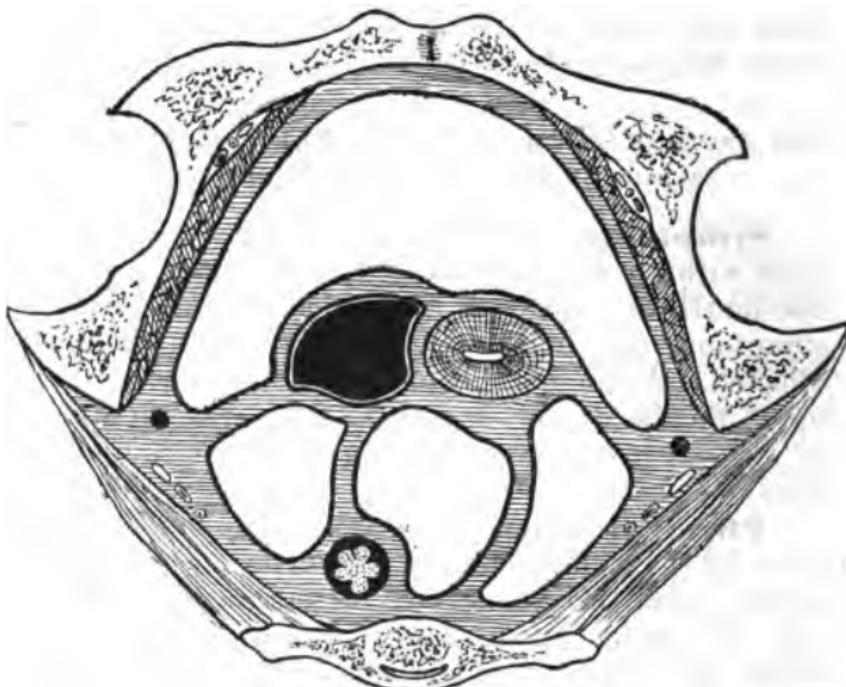

Fig. 63.—Diagram to illustrate the beginning of the common kind of puerperal parametritis: an inflammatory lump by the side of the uterus. (*After Fritsch.*)

peritoneum to the anterior abdominal wall. The inflammation sometimes involves the psoas and iliacus muscles, or burrows between them and the pelvic brim. When this is so, the thigh is fixed in a position of flexion. This occurs in about one case in ten. In such cases the illness is severe and its course long.

Terminations of inguinal parametritis.—There are two ways in which this inflammation

ends : (1) *absorption,* also called "*resolution,*" and
(2) *suppuration.*

1. **Absorption.**—In cases ending in absorption
the swelling has within two or three weeks completely
gone, not a trace of it being palpable. The whole
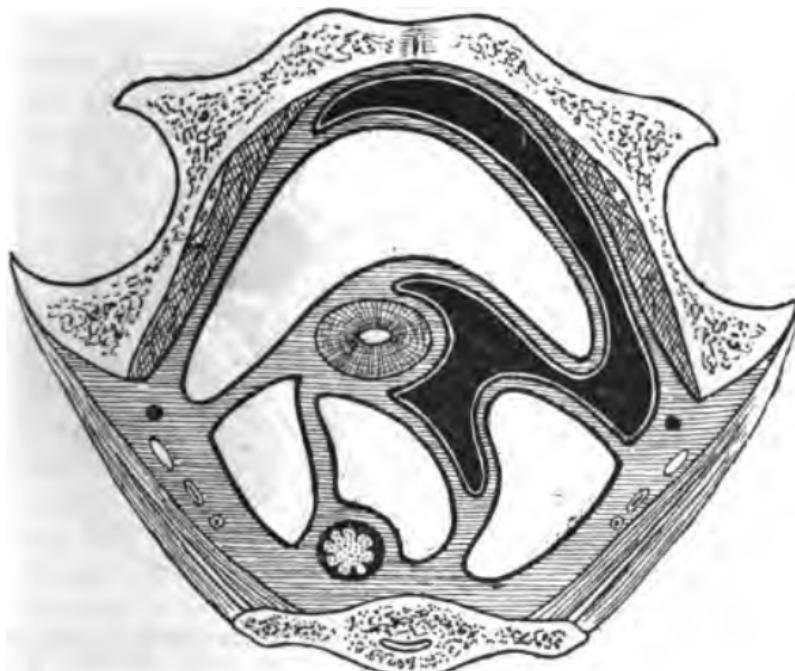
Fig. 64.—Diagram to illustrate the mode of extension of the
common kind of puerperal parametritis : from the side of the
uterus outwards to the pelvic wall, and then upwards and
forwards behind Poupart's ligament. The beginning of
extension between uterus and bladder, and back by the side
of the rectum, is also shown. (*After Fritsch.*)

illness is then over within a month from its begin-
ning.

2. **Suppuration.**—If suppuration takes place,
pain and fever continue. The inguinal swelling be-
comes larger. Then the skin over it becomes œdemat-
ous, red, and at length fluctuating. The usual place

for pointing is a little above the internal abdominal
ring; that is, near to where the round ligament leaves
the abdomen. ·Until the abscess bursts or is opened,
pain, hectic fever, and wasting continue.   When the
pus has had exit, the temperature falls, pain ceases,
nutrition improves, and rapid recovery takes place.
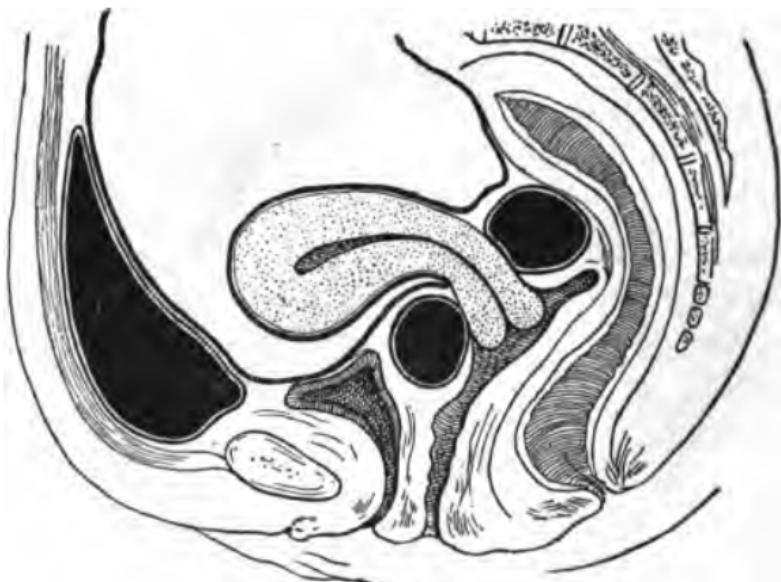
Fig. 65.—Diagram to show the situation of the common kind of
puerperal parametritis : above the pelvic brim, between the
peritoneum and transversalis fascia. Lumps of inflammation
in front of and behind the uterus are also shown. N.B.—
The bulk of the swelling is not median, although here, for
the sake of clearness, it is represented so. (*After Fritsch.*)

In most cases the illness is over within three months
of its commencement.

Diagnosis.—The seat of pelvic inflammation
cannot be stated until the lymph is so organised that
it forms a swelling which can be defined.   The in-
guinal swelling of parametritis is identified by its
characteristic position and shape.

It is not possible in the early days of the inflam-

mation to say whether it will end in absorption or in suppuration. The longer the temperature keeps up and the swelling persists, the more likely is it that suppuration will occur.

Treatment.—All that is required is to place the patient under favourable conditions, and as soon as practicable to let out pus. (1) So long as there is fever, keep the patient in bed. (2) Support the patient's strength. (3) Protect tender parts from pressure by adjustment of bedclothes, cradles, pillows, etc. In this disease the patient's suffering is more general malaise due to the fever than local pain. Iodine will do no harm, and may please the patient, if the abdomen is painted, either with tincture of iodine, or with equal parts of the tincture and the liniment. (4) Let out pus. Suppurated parametritis will generally burst. As soon as you can feel fluctuation, open the abscess by a free incision where it is pointing. Then lightly plug the abscess cavity with a strip of iodoform gauze, to ensure that the cavity may fill up from the bottom. Improvement in all symptoms generally at once begins. I know of few diseases in which the good effect of surgical intervention is so striking to the public.

NON-PUERPERAL PARAMETRITIS

Non-puerperal parametritis is less common than the puerperal form. Its usual cause is injury to the cervix.

Peculiarities of non-puerperal parametritis.—The disease in these patients differs from that in puerperal women in that it seldom tends to rise into the false pelvis ; and in that it more often leads to organisation of lymph into fibrous tissue, and less often ends in suppuration.

Symptoms and signs.—Diagnosis is made from the seat of the exudation. It is at first felt

at the side of the uterus, the induration beginning
where the vagina is inserted into the cervix.   When
the inflammation extends, it spreads down and
back, instead of up into the false pelvis as in the
puerperal form.   The mass it forms feels as if it
sloped off from the cervix uteri outwards and to-
wards the pelvic outlet. (Fig. 59.) The upper
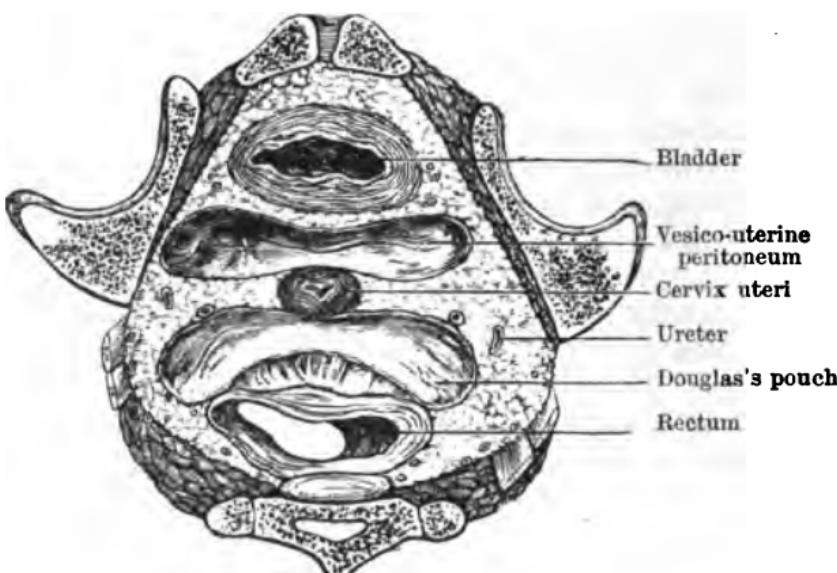
Fig. 66.—Horizontal section through pelvic cavity, showing
cellular tissue surrounding rectum, and peritoneum in front
of it. (*After Freund.*)

third of the vagina feels hard, stiff, and smooth,
is injected, and secretes pus.   The exudation extends
back on each side of the rectum, so that by the bowel
you feel a concave half-ring surrounding the rectum
and fixed to the bone on each side of it.   Fibrous
tissue in this situation cannot be produced by peri-
metritis ; for Douglas's pouch is in front of the
rectum, between it and the vagina, and does not
reach back to the sacrum on each side of the bowel.

(Fig. 66.) This half-ring surrounding the front of
the rectum is characteristic of exudation into the
cellular tissue.

Course and terminations.—The usual course
of non-puerperal parametritis is that the febrile
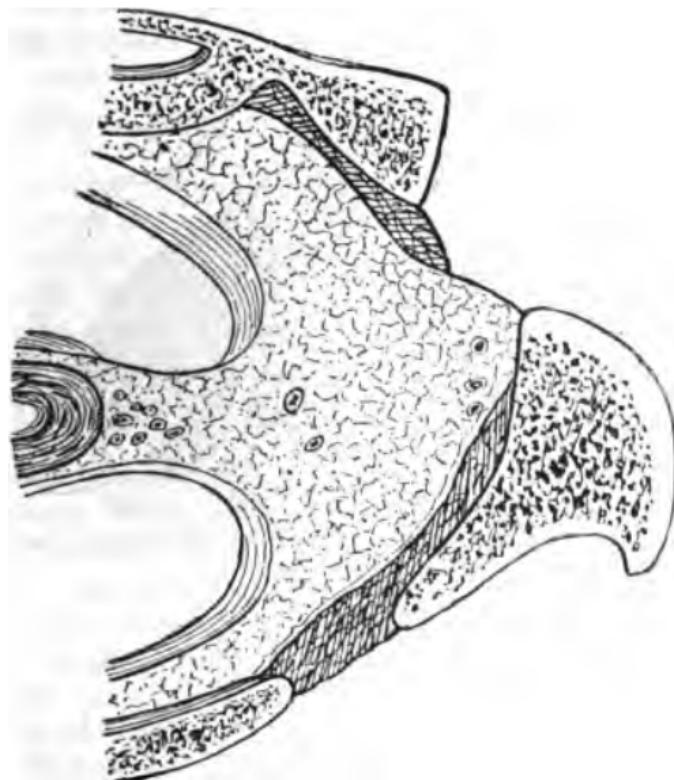
Fig. 67.—Showing cellular tissue extending back to sciatic notch.
(*After Freund.*)

symptoms run an irregular course, but usually sub-
side within a few weeks.

1. The exudation may be completely absorbed.

2. The exudation may become organised into
fibrous tissue. This is commoner after non-puerperal
parametritis than after puerperal. The uterus re-
mains fixed for months, or it may be years. Solid

knots of fibrous tissue may persist for years; such lumps may possibly be taken for new growths or for diseased tubes. Freund says he has in *post-mortem* examinations several times seen one ureter, and once both ureters, compressed by a large lump of


Sacrum

Rectum

Pouch of Douglas containing fluid

Parametric cellular tissue

Vaginal roof in left lateral fornix

Anterior vaginal wall

Obturator internus

Levator ani

Ramus of ischium

Foramen of sacrum

Ischial tuberosi

Obturator externus
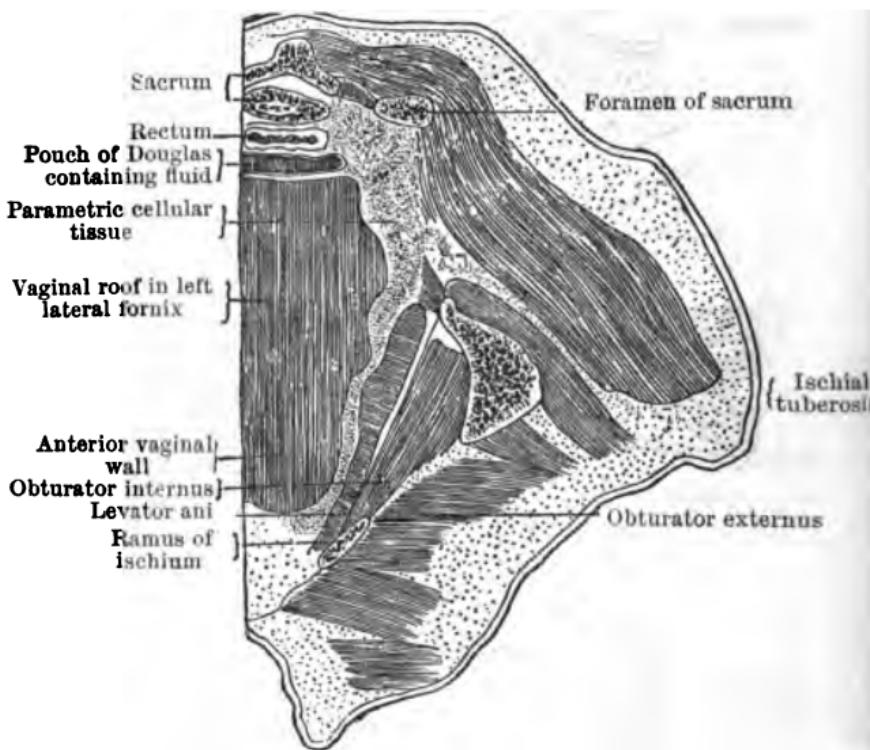
Fig. 68.—Section through pelvis, near outlet, showing continuity of cellular tissue within pelvis, through sacro-sciatic notch, with that outside it. (*After Barbour.*)

parametric exudation. The half-ring which surrounds the rectum may produce obstruction if constipation leads to the fæces being large and hard. Chronic pelvic pain may be felt for years.

3. Suppuration. The usual place for pointing is by the side of the sacrum, over the sacro-sciatic notch.

(Figs. 67 and 68.)   But it may burst into the vagina, rectum, or bladder.

THE RARE KINDS OF PUERPERAL PARAMETRITIS

Rapidly spreading inflammation of cellular tissue.—Sometimes the inflammation begins soon after delivery, spreads quickly to the peritoneum, and the patient dies within two or three days.   This is what used to be called " erysipelas of the cellular tissue."   This disease is not the same as cutaneous erysipelas.   The disease is seldom diagnosed as inflammation of the cellular tissue during life, because the patient dies before the exudation in the cellular tissue is sufficiently organised to be defined by the touch.

I have seen inflammation less acute than this, beginning four or five days after delivery, and ending fatally within two or three weeks, with rapidly increasing inflammatory swelling, attended with diffused œdema of the skin over and around it, and great prostration.   In some cases of exceptional severity, sloughing may take place, and may open a large vessel, from which the patient may bleed to death.   To this form Dr. Matthews Duncan gave the name of " *hæmorrhagic parametritis.*"

Delay in pointing. — A parametric abscess usually soon " points "—that is, the swelling each day bulges more and more, the skin becomes reddened and thinned at its most prominent part.   But in some cases it seems as if the pus were kept down by some dense structure which the leucocytes find difficulty in absorbing.

When inguinal parametritis goes on for weeks without pointing, it ought to be opened.   If the temperature keeps up (without physical signs elsewhere to account for it) and the lump does not get smaller, pus

is present. Let out the pus by an incision like that made in ligaturing an iliac artery, *i.e.* above and parallel to Poupart's ligament.

Delayed healing.—A parametric abscess of the common kind, when the pus is let out, closes up in a few weeks. But sometimes these abscesses are long in healing. The abscess may have a tough, fibrous wall half an inch, or even an inch, in thickness. An abscess with such walls may discharge for months. In such cases, if the opening for the escape of the pus be not kept patent, it will close, the pus will accumulate, then the abscess will burst, and will close again, and so on. Matthews Duncan mentions a case in which this went on for two years.

Unusual situations of pointing.—Puerperal suppuration starting in the broad ligament may extend up by the *back* of the pelvis to the kidney, producing a *perinephritic abscess.* It hardly ever extends so as to form an abscess over the iliac fossa, but I have known it do so. An abscess in this situation almost always takes its origin from bowel or bone, not from the broad ligament.

An abscess may point in the middle line of the abdomen.* Sometimes the pus escapes from the pelvis by way of the femoral ring, underneath Poupart's ligament. I have seen it point in two places at once—above Poupart's ligament and below it. I have known the pus collection situated in the middle line in front of the uterus, feeling as if one with it, and burst at the umbilicus.† My conjecture is that the abscess reached the umbilicus by way of the vesico-uterine cellular tissue and the urachus.

Sometimes a puerperal abscess in the broad liga-

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* *See* McClintock, "Diseases of Women," p. 11.
† See *Obstetrical Journal*, vol. v., p. 352.

ment leaves the pelvis by the sacro-sciatic notch, and points in the buttock by the side of the sacrum. I have known it follow the tendon of the obturator internus muscle to the trochanter and point in the thigh near this bony point.*

Parametric abscess may burst into the bladder. Matthews Duncan relates a good example of this.† An intrapelvic abscess may perforate the obturator foramen. I have only seen one instance of this. All these places of bursting are exceptional: the puerperal parametric abscesses which burst above Poupart's ligament outnumber all the rest put together.

Bending and fixity of the thigh.—In about one case in ten the thigh is bent up at a right angle, or near it, and fixed. In cases of this kind I have found that a pocket of the pus-containing cavity extended underneath the psoas muscle, between it and the bone. When the matter is let out, the thigh ceases to be fixed.

Remote parametritis.—There are cases in which there is an abscess that apparently has no connection with the uterus. Nevertheless, from the development of a large abscess without any discoverable cause, except the possible accident of labour, it is inferred that the suppurative inflammation began near the uterus, and that the changes caused at the place of its origin have subsided. This is "*remote parametritis.*" I have seen a large puerperal abscess in the buttock without pyæmia, disease of bone, injury, or trace of intrapelvic disease.

Puerperal parametritis not rising into the false pelvis.—In some cases of puerperal parametritis the inflammation does not rise above

* Duncan, "Perimetritis and Parametritis," p. 159, quotes from Thomas a similar case.
† "Clinical Lectures,' 4th edition, p. 245.

the pelvic brim, but extends in the same manner as in the non-puerperal form, downwards to the pelvic outlet and backwards around the rectum.

Anterior parametritis. — Sometimes parametritis begins in the vesico-uterine cellular tissue. (Fig. 69.) This is not common. It may suppurate


Transverse colon

Uterus

Visceral peritoneum
Parietal peritoneum
Placental site
Uterine cavity containing blood-clot
Cervix uteri

Cellular tissue

Bladder
Vein
Symphysis pubis
Urethra

1 Sacral vertebra

Rectum

Pouch of Douglas containing serum
Fold of cervical canal

Cellular tissue
Vagina
Anus (upper part)
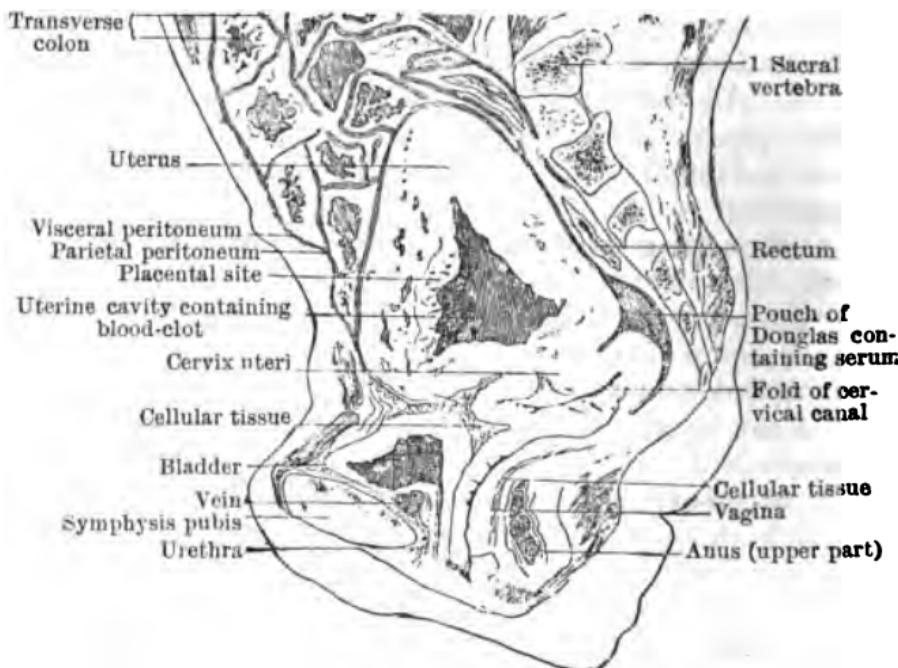
Fig. 69.—Section through pelvis of puerperal woman in sagittal plane, showing cellular tissue between uterus and bladder. (*After Barbour.*)

and burst into the vagina or into the bladder, or extend into the inguinal region. (Fig. 70.) I have twice seen inflammation of the cellular tissue between the bladder and pubic symphysis.

Non-puerperal inguinal parametritis.— Sometimes, but very seldom, in parametritis independent of pregnancy, the inflammation extends upwards into the groin. In these cases the course

of the illness was like that of non-puerperal para-
metritis in being chronic, so that when opened nearly
an inch of dense fibrous tissue had to be cut through
before the pus was reached.
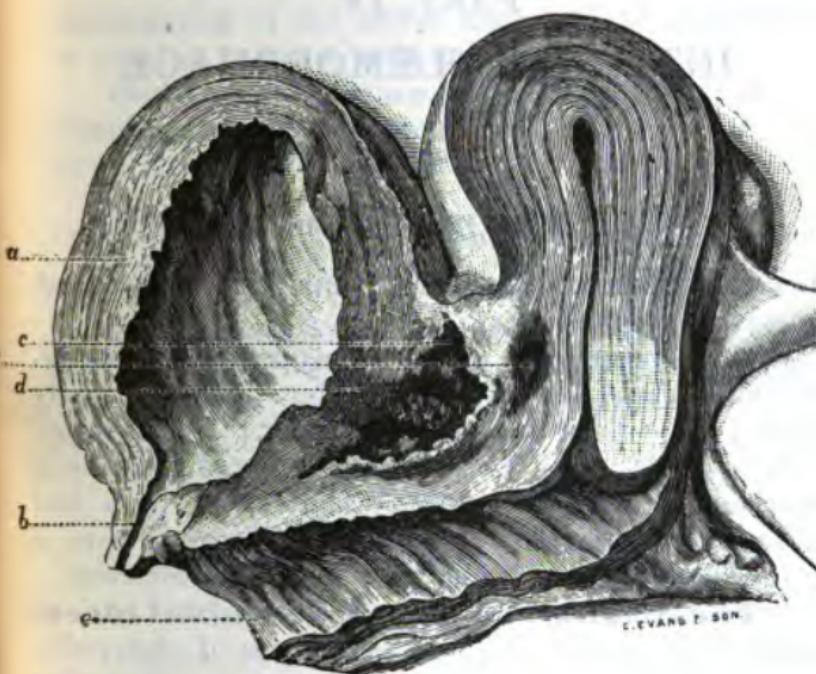
Fig. 70.—Suppurated anterior parametritis.
(*After W. S. A. Griffith.*)

a, Bladder contracted ; *b,* urethra ; *c,* parametritis ; *d,* communication
between abscess and bladder ; *e,* vagina ; *f,* extension of abscess into
cervix.

**Inguinal cellulitis from malignant dis-
ease resembling parametritis.**—Cancer of the
cæcum or the sigmoid flexure may lead to inflam-
mation of the cellular tissue in the groin, and this
may form a swelling precisely resembling, at one period
of its course, that of inguinal parametritis.

PART IV

INTERNAL HÆMORRHAGE

CHAPTER XIX

GREAT INTERNAL HÆMORRHAGE

HÆMORRHAGE into the peritoneum may be so great as to kill the patient.

The symptoms of great internal bleeding.—The patient is very pale. Her lips are nearly white. Her pulse is small and quick. Her extremities are cold. She is powerless. Sometimes she is restless, throwing her limbs about. This is a bad symptom, indicating approaching death. There is no difficulty of breathing, no loss of consciousness.

The diagnosis of intra-abdominal bleeding.—The pallor and the smallness of the pulse, with the sudden onset of these symptoms, show that blood has been lost. If no blood has been lost outside, the bleeding must have been inside. The belly is soft and not markedly tender ; there may be dulness in the flanks ; pain is slight ; there is little or no vomiting ; and there is no fever. If the blood has had time to clot, you may feel a swelling in Douglas's pouch ; but till the blood has clotted, there are no definite physical signs.

THE CAUSES OF GREAT INTRA-ABDOMINAL BLEEDING
WHICH ARE COMMON TO BOTH SEXES

Ulcer of the stomach or duodenum may cause *hæmorrhage*.

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Ulceration in enteric fever may cause sudden collapse, either by *perforation* or by *hæmorrhage*.

Cirrhosis of the liver may cause great bleeding into stomach or bowel.

It is possible that **tubercular or dysenteric ulceration** of the bowel may lead to hæmorrhage so great as to cause sudden collapse.

Rupture of an aneurysm may cause sudden bleeding into the abdomen; but is, in women, exceedingly rare.*

THE CAUSES OF GREAT INTRA-ABDOMINAL HÆMOR-RHAGE PECULIAR TO THE FEMALE

Great hæmorrhage into the peritoneal cavity may take place in a woman who, until the bleeding began, thought herself perfectly well. The bleeding may be from one of four causes :—

1. Rupture of a pregnant Fallopian tube.
2. Rupture of a varicose vein.
3. Rupture of an ovary.
4. Rupture of the gravid uterus.

Great intraperitoneal hæmorrhage occurring in a previously healthy woman whose age is that within which pregnancy is possible, is more likely to be due to a ruptured tubal pregnancy than to anything else.

Rupture of tubal pregnancy generally occurs before the end of the second month. (Fig. 71.) The rupture may be between the layers of the mesosalpinx, and then the hæmorrhage will be into the cellular tissue. The rupture may take place where the tube is covered by peritoneum. Then the bleeding will be into the peritoneal cavity. In tubal pregnancy the trophoblasts eat their way into the

* *See* Fagge, " Medicine," 1st edition, vol. ii., p. 75.

wall of the tube as they do into the uterine mucosa in normal pregnancy. The ovum comes to lie in a cavity bounded at one part by muscular tissue and peritoneum (called by some *basalis*), at another by
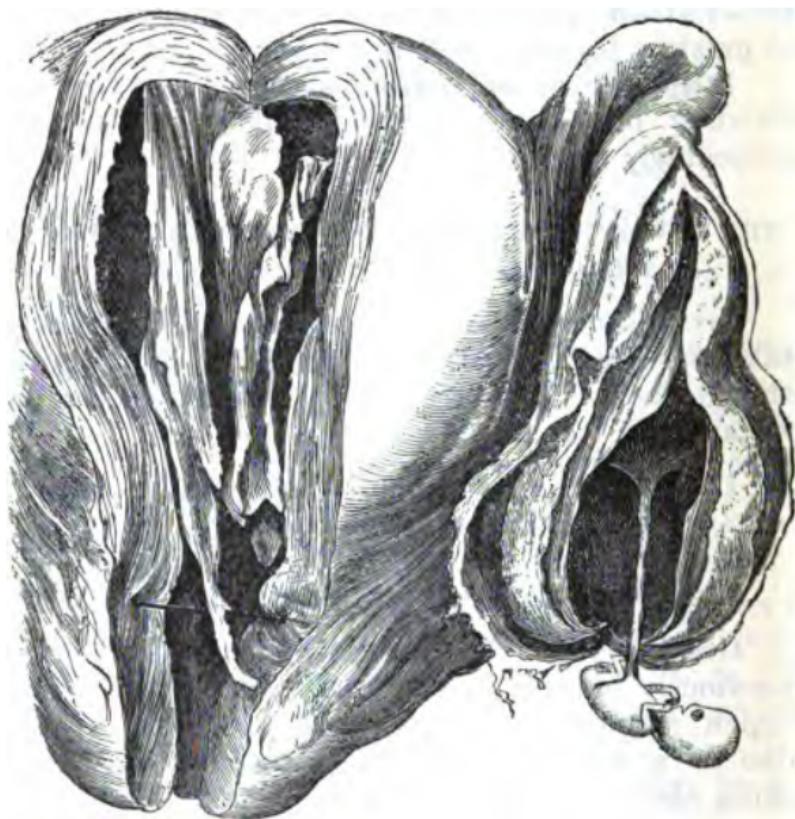

Fig. 71.—Tubal gestation and rupture. (*From a specimen in the Museum of St. Thomas's Hospital. After R. Barnes.*)

muscular tissue and mucous membrane (called by some *capsularis*). During the first seven or eight weeks the trophoblasts go on eating up tissue, and in the process they open up vessels so that hæmorrhage takes place and causes rupture· This rupture may be on the peritoneal aspect of the sac (basalis),

or it may be of the capsularis. If the latter, the ovum will escape into the lumen of the tube, and blood along with it. This is called *tubal abortion*. The bleeding takes place under tension, and therefore soon stops. There generally are repeated hæmorrhages. The blood may escape from the abdominal ostium of the tube. If in small quantity it will clot, and the clot will become organised into fibrous tissue. While this is going on fresh bleedings may take place from the tube, stretching the organised clot that surrounds its ostium ; and thus a swelling is formed consisting of recent blood limited by a capsule of older clot organised into fibrous tissue. This capsule may lie free in the peritoneal cavity, or be adherent to bowel, ovary, uterus, or parietal peritoneum. A swelling of this kind, lying around the ostium of a Fallopian tube, has been called a *peritubal* hæmatocele. Exactly the same thing may happen, though it is much more rare, round a rupture of the peritoneal surface of the tube ; and this has been called a " *paratubal* " hæmatocele.* Tubal abortion, followed by the formation of a hæmatocele, death of the ovum, and absorption of hæmatocele and ovum, is the commonest termination of tubal pregnancy. Rupture with great bleeding into the peritoneal cavity is fortunately rarer. There is yet another event that may happen. Tubal abortion may take place, but the abdominal ostium of the tube get stopped up, either by clot or by adhesions. Then further bleeding into the tube may first distend and afterwards cause *secondary rupture* of the tube.

Although a tubal pregnancy sometimes bursts without any preceding symptoms to indicate its presence, yet there are usually symptoms before the great bleeding.

* Handley, *Obst. Trans.*, vol. xliv., 1902.

The symptoms of early extrauterine pregnancy.—In the beginning there are no symptoms beyond those of natural pregnancy. This is why tubal pregnancy has been so rarely discovered before rupture.

Symptoms of tubal pregnancy in which slight hæmorrhage has occurred.—In most cases the diagnosis has been made from the symptoms caused by a slight hæmorrhage. The symptoms that usually lead to the diagnosis of early extrauterine pregnancy are the following :—

1. **The patient's sensations.**—The patient thinks she is pregnant.

2. **Severe paroxysmal pains in the lower belly.**—These attacks of pain sometimes come on without any known cause. The pain is often severe. They seldom begin before the end of the first month, and have been observed to recur as late as the fifth month. Later than this such pains seldom occur. The repeated attacks of pain are caused by repeated hæmorrhages.

3. **Irregular hæmorrhages from the vagina.**—These are seldom great.

4. **The discharge of decidua.**—In extrauterine pregnancy, a decidua is formed in the uterus, and is discharged. It may pass away in a pulp along with blood. It may be expelled as a sac, forming a cast of the uterine cavity ; in two pieces, one of which lined the anterior, the other the posterior uterine wall, or in several smaller bits ; with pains and hæmorrhage like those of abortion ; and the patient may think she has miscarried. This is the explanation of the irregular hæmorrhages referred to in the preceding paragraph.

The decidua of extrauterine pregnancy is like that of membranous dysmenorrhœa, except that it is larger and thicker. Its internal surface is smooth,

and dotted with the mouths of the uterine glands. Its outer surface is rough, shaggy, and villous, the villi being the ends of the uterine glands.

The decidua of extrauterine pregnancy differs from that of uterine pregnancy in showing no trace of a decidua reflexa, or of an amnion.

It was at one time thought that the discharge of such a membrane made the diagnosis of ectopic pregnancy certain ; but this is not the case.

5: **Presence of a pelvic swelling and of uterine contraction.**—If the patient — who thought she was pregnant, has had paroxysmal pains and irregular hæmorrhages, and has passed a decidua—has a slightly enlarged uterus, and on one side of that uterus a swelling ; if, knowing that these signs and symptoms were present, you find that the patient has great intra-abdominal hæmorrhage, rupture of an ectopic pregnancy is the condition present.

1. **Intraperitoneal bleeding from rupture of a varicose vein.**—Rupture of a varicose vein, so that intraperitoneal hæmorrhage follows, is rare, but occasionally occurs. The bleeding is great. The recorded cases have been fatal too quickly for treatment.

2. **Intraperitoneal bleeding from rupture of an ovary.**—The pathology of the conditions which cause bleeding from the ovary is obscure.

(a) *Follicular hæmorrhage.*—Whenever a Graafian follicle bursts there is a little bleeding.

(b) *Multiple follicular hæmorrhages.*—These hæmorrhages are most frequently caused by one of those febrile infective diseases in which there is a tendency to hæmorrhage. Such hæmorrhage has never been recognised during life, and therefore never treated.

(c) *Ovarian blood cysts.*—Bleeding may take place

into a follicle and the follicle may not burst.   Other
follicles, instead of bursting on the surface of the
ovary, may burst into this cavity.   From these con-
ditions, a blood cyst of the ovary arises.   The ovary
has been found as large even as a man's head.*   Such
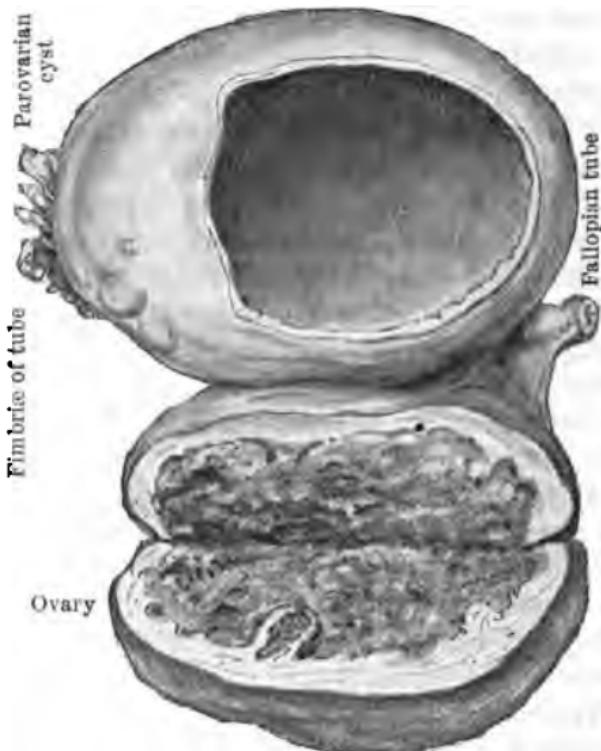
Fig. 72.—Interstitial hæmorrhage into ovary. (*Royal College of
Surgeons Museum*, 4,548.   *Reduced.*)

distension of the ovary causes pain.   We know not
how clinically to distinguish a blood cyst of the ovary
from an ordinary cystic tumour of the ovary or
from a distended Fallopian tube.

The cyst may burst, and bleeding take place into
the peritoneum; and hæmorrhage from the rupture

* Boeckel, quoted by Rollin, *op. cit.*

of such a blood cyst may be so great as quickly to kill the patient. These cases are so rare that there are no signs or symptoms from which in a case of great intraperitoneal hæmorrhage we can say that
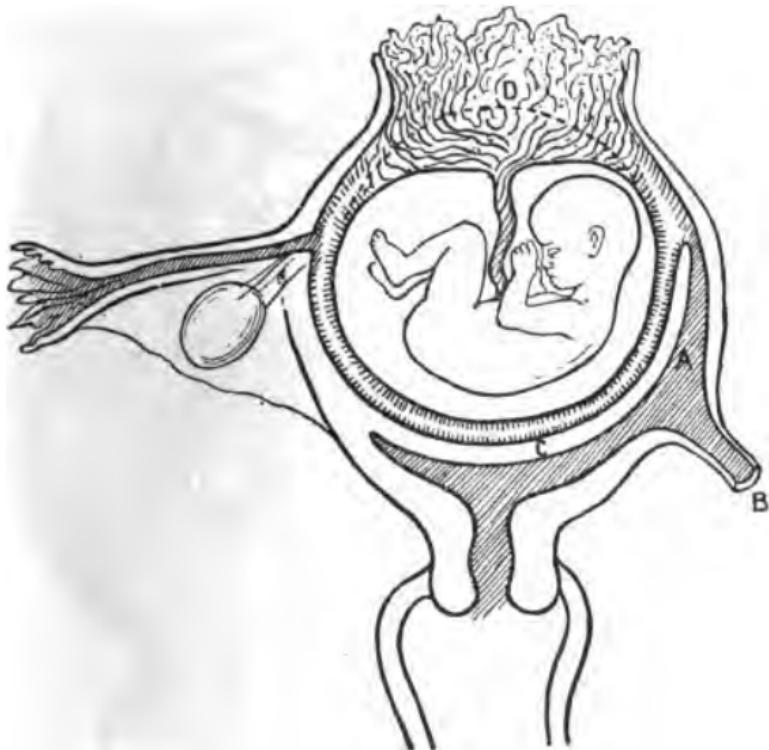
Fig. 73.—Diagram illustrating rupture of interstitial pregnancy. (*Lawson Tait.*)

A, Uterine cavity ; B, Fallopian tube ; c, part of uterine wall bounding gestation sac ; D, place of rupture.

the bleeding comes from rupture of an ovarian blood-cyst.

(*e*) *Rupture of an ovarian cyst.*—A cystic ovary may rupture. If the cyst wall be very vascular fatal hæmorrhage may take place.

(*f*) *Interstitial hæmorrhage into the ovary and rupture* (Fig. 72).—These cases are very rare. The

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ovary looks like a mass of black clot, and can only be identified as the ovary by its anatomical relations. Fatal hæmorrhage from a ruptured ovary into the peritoneal cavity may take place.
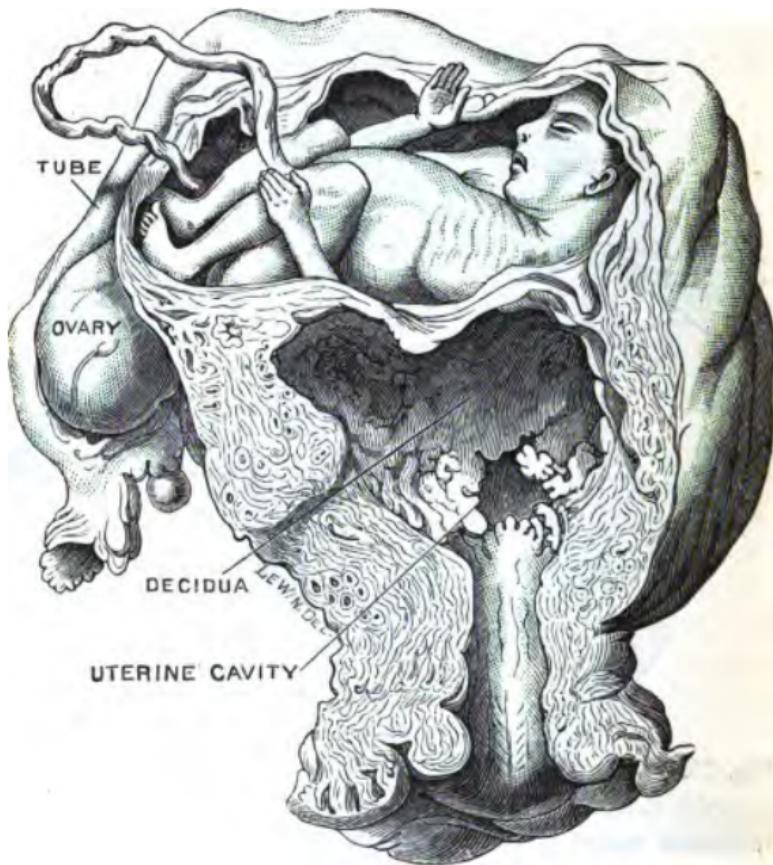
Fig. 74.—Case of interstitial pregnancy.   (*Bland-Sutton.*)

3. **Rupture of the gravid uterus** during pregnancy, before labour, is rare.   But rupture of the uterus in apparently normal pregnancy may take place.

Pregnancy in a rudimentary uterine cornu.—Pregnancy may take place in the im-

perfectly developed horn of a bicorned uterus (Fig.
75). Such a pregnancy is clinically the same thing
as a tubal pregnancy. It can only be distinguished
from tubal pregnancy by looking for the insertion
of the round ligament. In this condition the round
ligament is inserted outside the pregnancy ; in tubal
pregnancy, inside it.
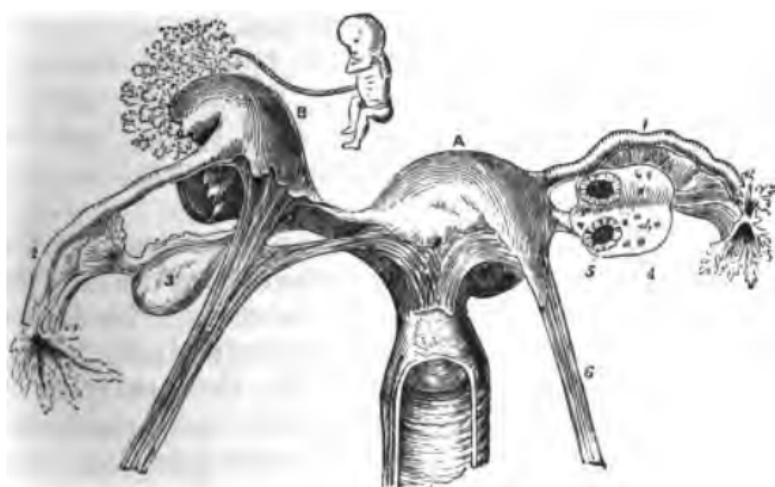
Fig. 75.—Pregnancy in a rudimentary uterine cornu. (*Luschka.*)

A, Developed uterine cornu (right) ; B, rudimentary uterine cornu (left',
with a rent through which the fœtus has escaped ; 1, right Fallopian
tube ; 2, left Fallopian tube ; 3, left ovary ; 4, right ovary ; 5, corpus
luteum ; 6, round ligament.

**Treatment of great intraperitoneal
bleeding.**—The treatment is to open the belly,
find the cause of the hæmorrhage, and deal with it.
This operation must be done at once. The danger
from delay is greater than that from want of expe-
rience in the operator, for the operation is easy,
and if done early and with clean hands and instru-
ments will be successful.

How to do the operation.—The instruments
required are the same as for ovariotomy, except the
trocar. One assistant, besides the anæsthetist, is

needed. Make a three-inch incision in the linea alba, midway between pubes and umbilicus. Insert two fingers and feel for the body of the uterus. This will guide you to the broad ligaments. Pass the fingers outwards, along each ligament. If you feel any abnormal condition, bring the part out at the wound and look at it. If there be a tubal gestation, or a ruptured ovary, or a hole in a vein, transfix the ligament between the diseased part and the uterus with a double ligature. See that the two ligatures cross one another so as to interlock. Tie each separately. Cut away the diseased part. Now sponge out the effused blood, and wash the seat of operation with sterile normal saline solution.

In rupture of the uterus during pregnancy, the proper treatment is to open the belly, cleanse the peritoneum, and either sew up the rent in the uterus, or, if the rent be confined to the uterine body, amputate the body of the uterus. In the rare case of rupture of an interstitial pregnancy, amputation of the body of the uterus is the better practice. The mode which gives the best results is first to tie the broad ligaments, next to tie the uterine arteries, and then to cut off the body of the uterus, suturing the peritoneum over the stump.

CHAPTER XX

PELVIC HÆMATOCELE

WHEN bleeding from vessels in the pelvis is not so great as to threaten life, it causes pain, and a lump. Such a lump is commonly called a *hæmatocele*.

Intraperitoneal hæmatocele means a lump formed of clotted blood in the pelvic part of the peritoneal cavity.

Causes of intraperitoneal hæmatocele:
1. **Tubal pregnancy.**—The most common cause is tubal pregnancy. Tubal abortion often ends in spontaneous recovery.

2. **Disease of the ovary.**—Pelvic hæmatocele may come from the ovary. In the previous chapter I have described the conditions of the ovary which cause hæmorrhage. They may sometimes be the source of bleeding which stops before the patient's life is in danger. If so, the blood clots, forms a lump, and is absorbed.

3. **Perimetritis.**—In patients the subjects of chronic perimetritis, it is common to find blood in some of the spaces bounded by adhesions. This intraperitoneal bleeding is an incident in the course of perimetritis, and does not materially modify its symptoms or course.

Symptoms and signs.—The lumps of clot in the pelvic peritoneum which we call *hæmatoceles* cause pain, with faintness and pallor, and sometimes vomiting. The patient lies down, and expects the pain to pass off; she calls in the doctor when she finds the pain does not subside. A lump is felt when the

blood has had time to clot, not before. The blood first lies about the Fallopian tube, and then trickles down into Douglas's pouch. Hence the lump of clot is behind the uterus. If there is enough of it to fill the posterior half of the pelvis, the bulk of the clot is in the middle. If less than this, there is more of the lump on one side than in the middle line. The lump is tender. When the clot is big, it pushes the uterus forwards. The clot in Douglas's pouch presses on the rectum, and causes rectal tenesmus and pain in defæcation, and some catarrh of the rectal mucous membrane. The clot may cause frequency of micturition. If there should be adhesions above the pelvis, the bleeding may much displace the uterus, pushing it forwards, compressing the urethra, and causing retention of urine. Such displacement as this only happens when the blood is effused under pressure.

Diagnosis.—The physical signs are the same as those of a lump formed by inflammation of the peritoneum around the ovary and tube. The lump made of blood-clot is distinguished from an inflammatory lump by the way in which the illness came on. Instead of shivering and febrile symptoms, and pain afterwards developing, the blood tumour comes on with sudden pain, faintness, and pallor. If the bleeding be a result of tubal gestation, it may have been preceded by amenorrhœa, with the subjective symptoms of pregnancy.

Prognosis.—The prognosis in a case of intra-peritoneal hæmatocele depends upon the cause of the bleeding. If this comes from a growing tubal gestation, there will be more bleeding; if from a tubal mole (Figs. 76, 77, 78), this may suppurate;* if from an inflamed tube, this may make the patient a chronic invalid; if from a diseased ovary, this may bleed

* *See* case by Remfry, *Obst. Trans.*, vol. xxxvi., p. 261.

again, or become inflamed. An intraperitoneal hæmatocele should therefore make you carefully

Fig. 76.—Tubal mole, external aspect. (*Cullingworth.*)

watch the case. On the other hand, many cases of intraperitoneal hæmatocele end in recovery by
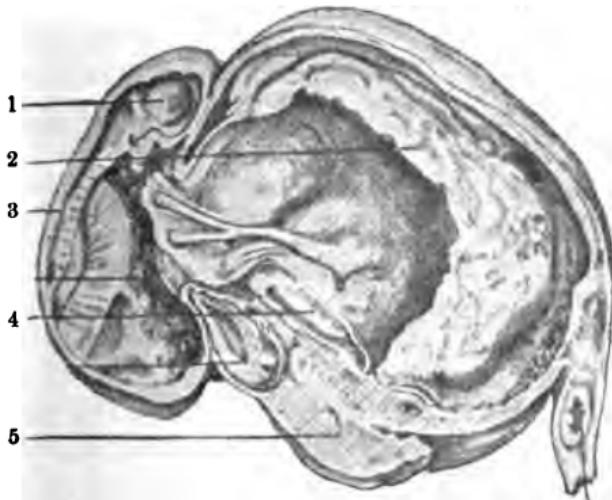

Fig. 77.—Tubal mole (Fig. 76) on section. (*Cullingworth.*)

1, Fœtal head ; 2, blood clot ; 3, fœtal spine ; 4, membrane lining interior of cavity ; 5, ovary.

gradual disappearance of the lump without bad symptoms.

Treatment of intraperitoneal hæmatocele.—There are two methods of treatment: 1. Expectant: leaving the case to nature. 2. Operative: removing the blood and the diseased ovary or tube whence it came. So long as there is nothing more than a small lump in the pelvis, presumed
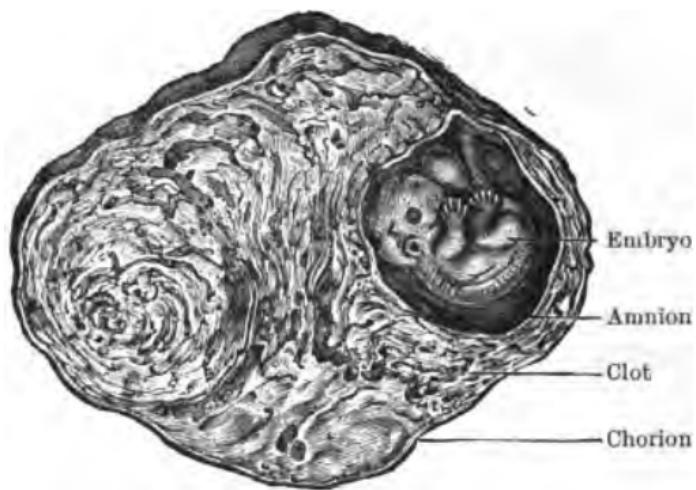
Fig. 78.—Tubal mole on section. (*Bland-Sutton.*)

to consist of blood-clot, let recovery go on without interference.

1. **Expectant treatment.** — This consists in keeping the patient in bed until it is clear that the blood is being absorbed, and that therefore further hæmorrhage is not to be feared. If the bowels are confined, a laxative will be good. If the patient is in much pain, she may need a dose of morphia. If the case goes on well, the lump that you feel by the vagina will soon get harder and smaller, its convexity will become changed into irregular concavities, and the local symptoms will cease. As soon as it is clear

that the case is taking this course, let the patient get up.

If the lump is not distinctly smaller within a fortnight, other symptoms—(a) those of renewed bleeding, (b) those of inflammation—may show themselves. The advent of either shows that the cause of the bleeding is still active. If so, the best practice is to anticipate further trouble and remove the diseased part. The risk of an operation done early is slight, less than the risk of leaving the disease.

2. **Surgical treatment.**—Suppose (1) renewed hæmorrhage ; or (2) continued pain ; or (3) fever. The right course is to remove the disease. There are two ways of doing this : (i.) by the vagina, (ii.) by the abdomen. When practicable, the vaginal route is the better. If the mass greatly displaces the uterus it is certain that it is encysted. If so, you can deal with it by the vagina without opening the general peritoneal cavity. If the swelling is so large that you cannot by the vagina reach to the top of it, the abdominal route is better.

The vaginal operation.—Put the patient in the lithotomy position. Cut through the posterior vaginal wall for about an inch and a half from side to side at its most bulging part, and thus open the pouch of Douglas. With the fingers scoop out all the clot. Then bimanually feel the uterus, and trace outwards the Fallopian tube on each side. If the case be one of tubal abortion you will feel that on one side the tube is thickened, and you will be able to detach and get away the tubal mole. Then thoroughly wash the cavity with sterile saline solution and lightly pack it with iodoform gauze.

Extraperitoneal hæmatocele.—This means bleeding into the cellular tissue beneath the peritoneum, but above the deep pelvic fascia. Its commonest cause is the rupture of a pregnant tube where

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it is not covered with peritoneum, but is in contact with the cellular tissue (Figs. 79, 80). It sometimes happens after operations if a vessel underneath the peritoneum is injured without a breach of that membrane.
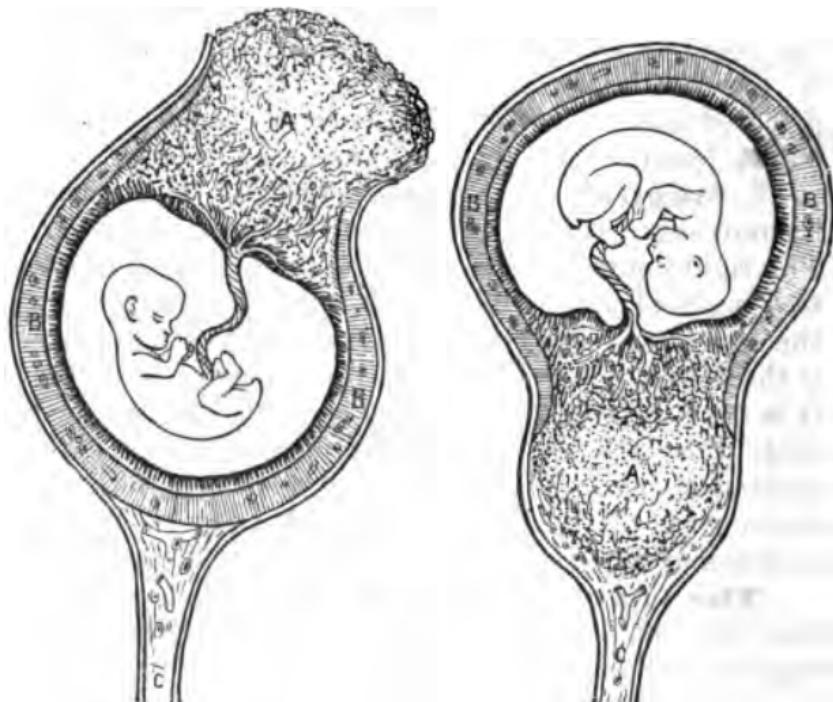
Figs. 79, 80.—Diagram illustrating modes of rupture of Fallopian tube. (*Lawson Tait.*)

Fig. 79 shows rupture of tube on its peritoneal aspect; Fig. 80, rupture of the tube at the part in contact with the tissue of the broad ligament. B, Wall of tube; A, seat of rupture.

Physical signs.—The blood is confined above by the peritoneum, below by the pelvic fascia. It is poured out on one side. When there is enough to force its way across to the other side, it makes its way back by the side of the rectum to the pelvic wall. The effusion forms a rounded, well-defined tumour, over which, before the blood has clotted, fluctuation

may be felt. Below, the mass slopes off downwards and outwards, feeling as if it merged into the pelvic wall. By the rectum, it will be felt as a half-ring, surrounding the rectum, and fixed to the pelvic wall on each side of it. This half-ring is characteristic of effusion into the cellular tissue. It is not, and cannot be, produced by effusion into the peritoneum.

Clinical difference between intra- and extraperitoneal bleeding.—When the bleeding is under the peritoneum there is no immediate danger. Most cases end in subsidence of the symptoms and absorption of the blood. The remote risks are those of secondary rupture into the peritoneum, and of suppuration.

Treatment of extraperitoneal hæmatocele.—The treatment of this kind of blood effusion is always expectant.

While the patient is suffering from shock and pain keep her in bed. Give laxatives. If the gestation has been arrested, the blood will be gradually absorbed. As soon as you find the lump getting smaller and more uneven, let the patient get up. If the gestation has not been arrested, and the fœtus is developing underneath the pelvic peritoneum, the swelling will get larger, and the case ceases to be one simply of hæmatocele.

PART V.—HÆMORRHAGE

CHAPTER XXI

GENERAL CONSIDERATIONS AS TO UTERINE HÆMORRHAGE

Causes of great bleeding from the uterus.—
The causes of great bleeding from the uterus (other than that caused by injury) fall into three groups : (1) New growths, (2) morbid conditions arising out of pregnancy, (3) disease of the blood-vessels. Disease of the blood-vessels may cause fatal hæmorrhage without any change in the uterus perceivable by the unaided senses.

Menorrhagia and metrorrhagia.—*Menorrhagia* means excessive menstrual hæmorrhage ; and *metrorrhagia*, hæmorrhage not limited to the time of menstruation. It makes no practical difference whether the hæmorrhage observes monthly periodicity or not.

How hæmorrhage is important.—Hæmorrhage is important for two reasons : (1) Because it makes the patient anæmic ; (2) because it is sometimes the first symptom of malignant growth. The latter statement will immediately suggest an important practical question. When asked to treat a patient for uterine hæmorrhage, not enough to produce anæmia, ought you to insist on vaginal examination ? If the patient has had children, you should ; for slight hæmorrhage may be the first sign of cancer of the cervix.

When to dilate.—Suppose, now, that vaginal examination has been made and that neither by bimanual touch nor with the speculum can any evidence of disease be found. It is not possible to assert that there is no growth within the uterus without dilating the cervix. Is this necessary? It is not, unless simple treatment fails and the patient is becoming anæmic.

CHAPTER XXII

HÆMORRHAGE WITHOUT EVIDENCE OF PREGNANCY OR NEW GROWTH

Slight bleeding without physical signs.— If the uterus is healthy and yet bleeds more than it usually does, it is probably because more blood goes to it. What causes produce such afflux of blood ?

1. **Fatigue,** as from an over-long walk, a too protracted active game.

2. **Shock,** emotional or physical. — Violent exertion or an emotional shock, which makes the face red, may make the uterus bleed.

3. **Sexual excitement,** which provokes flow of blood to the genital organs.

4. **Climate.**—Residence in tropical climates is said by those who practise there to make menstruation more copious and women more liable to hæmorhage.

In recent cases it is hard to draw a line between simple metrorrhagia and so-called endometritis. With early *ectopic pregnancy* there is usually hæmorrhage, greater in amount than that of ordinary menstruation.

Treatment of slight though unusual bleeding without physical signs.—Send the patient to bed. If she is restless and sleepless, lessen reflex irritability by giving sodium bromide gr. xv. three times a day. Continue this treatment until the effects of the strain or shock have passed off, which will be in a few days. Then replace it by

advice to avoid the recurrence of the cause of bleeding.

Slight hæmorrhage with physical signs.
—One common cause is that the organ is *retroflexed*, the bleeding being produced by obstruction to the return of blood from the body of the uterus, owing to the bending back of the broad ligaments so that the veins in them are compressed.

Spontaneous dilatation. — There is *spontaneous dilatation of the uterus* with hæmorrhage. There is neither tumour nor ovum nor endometritis. Such cases are very rare. The uterine cavity may be so expanded as to contain a clot as big as a hen's egg, and attached to the uterine clots have been clots extending down the tubes.

Great bleeding at transition periods without physical signs.—Young girls sometimes have great bleeding from the uterus without any evidence of disease. Such bleeding has proved fatal, and careful examination of the uterus after death has failed to find any morbid change to account for the bleeding. In some cases of hæmorrhage from the uterus in women near the menopause, when the uterine cavity is explored, no morbid change can be detected, and if the curette is used, either no solid shreds at all are detached, or only few and small pieces.

Is this endometritis ?—Some call such cases *atrophic endometritis*. I know of no evidence that this atrophic condition is a result of inflammation. In these cases there is little or no pain. Leucorrhœa is not great. The patient's trouble is that she loses too much and loses too often. The bleeding is seldom enough to cause a high degree of anæmia.

Probably due to disease of blood-vessels.
—The insignificance of the appreciable local changes

and the transitory success of local treatment makes me think that the cause of the hæmorrhage is probably vascular degeneration.

We need knowledge of the changes in the uterus due to age and childbearing.

Treatment.—In these bleedings at puberty ergot is useless. I have found cannabis indica effective. In climacteric hæmorrhage give ergot. If this fail, combine with it digitalis. If drugs fail, the cervical canal should be dilated and the uterine cavity explored; for without this measure you cannot be sure that there is not a small fibroid, adenomatous growth, or commencing cancer. If you feel no new growth, scrape the interior with a blunt curette (for the cause of the bleeding may be disease of the endometrium) and then cauterise it. The best caustic is iodised phenol. This will almost always be followed by cessation or temporary diminution of hæmorrhage. Should it recur, you may inject tr. hamamelis into the uterine cavity. In cases at the climacteric age the uterus is an organ of little value to its owner; and therefore if the hæmorrhage is enough to make the patient pallid, and is not checked by treatment, the uterus may be removed.

CHAPTER XXIII

HÆMORRHAGE WITH A ROUNDED TUMOUR IN VAGINA ··

TAKE now a different case. On vaginal examination, the finger encounters a firm globular lump in the vagina, without any dimple in it that can be taken for the os. This may be one of four things—a fibroid polypus, a fibroid of the cervix, a sarcomatous growth, or an inverted uterus. The first of these is commoner than all the others put together.

Differential diagnosis.—Define the cervix uteri. A polypus has a stalk which is encircled by the cervix (Fig. 81). The tumour formed by an inverted uterus is also encircled above by the cervix (Figs. 82, 83). In a fibroid or a sarcoma of the cervix there is no ring encircling the tumour above; one side of the tumour is continuous with the vagina, and on the other is the os uteri flattened into a slit.

Diagnosis between polypus and inversion.—Take first the tumour which is encircled above by the ring of the cervix. If it be of about the size of the body of the uterus, it may be either an inverted uterus or a fibroid polypus. If it be much smaller or larger than this, it cannot be an inverted uterus. The great difference between an inverted uterus and a fibrous polyp is this : that if the uterus is inverted you cannot perceive the body of the uterus above the cervix, while if the tumour be a polyp you can. The presence of the body of the uterus above the cervix is found out in two ways—

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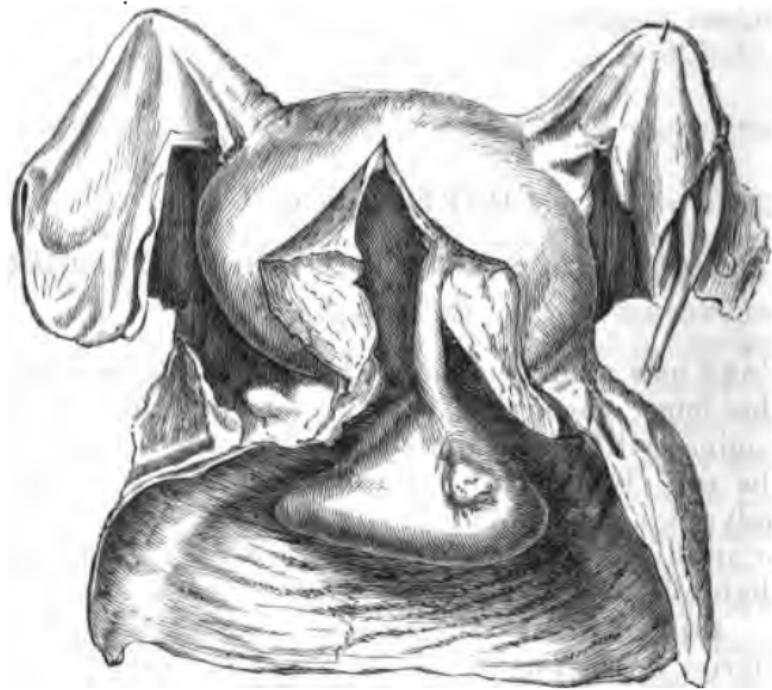
Fig. 81.—Polypus uteri.   (*R. Barnes.*)
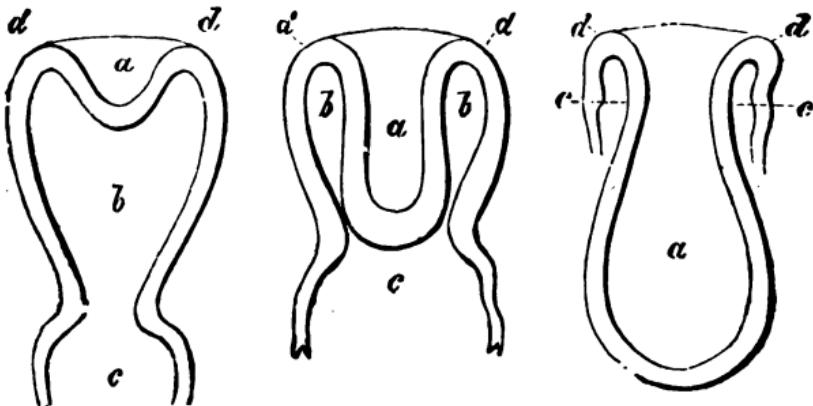
Fig. 82.—Diagram illustrating successive stages in the production
of inversion of the uterus.   (*Crosse.*)

a, Inverted fundus ; *b*, natural cavity ; *c*, vagina ; *dd*, upper margin of
the cup formed by the inverted fundus uteri.

first, by *bimanual examination.* If you cannot feel
the uterus by bimanual vaginal examination, try
bimanual rectal examination. The finger in the rec-
tum can reach higher up than the finger in the vagina.
If your finger in the rectum and hand on the abdomen
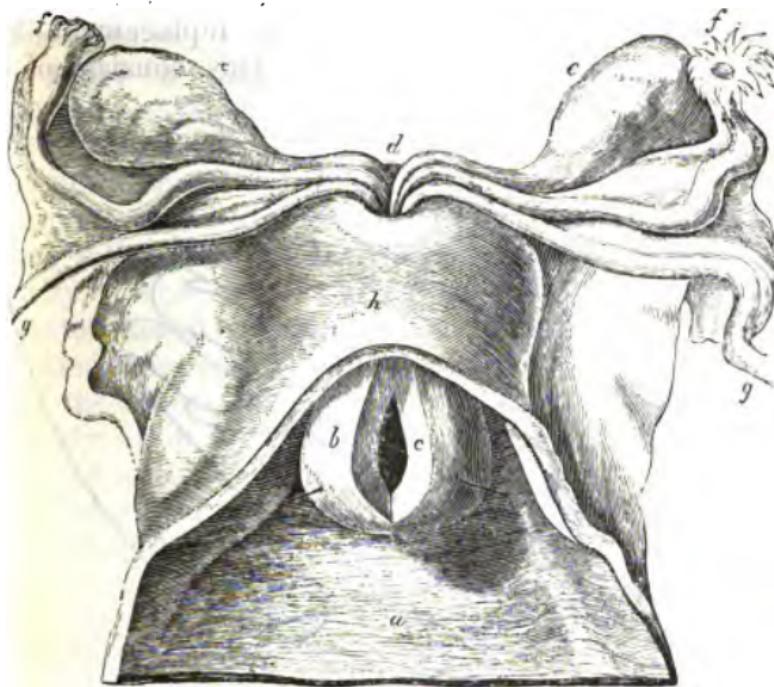
Fig. 83.—Inversion of the uterus. (*Crosse.*)

a, Vagina ; *b c,* body of uterus inverted ; *d,* neck of peritoneal pouch
    formed by inverted uterus ; *e,* ovary ; *f,* Fallopian tube ; *g,* round
    ligament ; *h,* peritoneum.

meet above the cervix, and feel the cervix like a ring
into which the rectal finger can be pressed from
above, the case is one of inversion of the uterus. But
in very fat women, or nervous women who keep the
abdominal muscles contracted, this method cannot
be carried out unless the abdominal walls are relaxed
by an anæsthetic. In such a case, *pass the sound.* In
an inverted uterus the sound will enter the sulcus

between the neck and the inverted body, passing about half an inch, but no farther. If the tumour be a polypus, the sound will pass up by the side of the pedicle (for the pedicle dilates the cervical canal) for $2\frac{1}{2}$ or 3 inches.

Treatment of chronic inversion of the uterus.—The treatment is its replacement by Aveling's repositor (Fig. 84). This consists of a
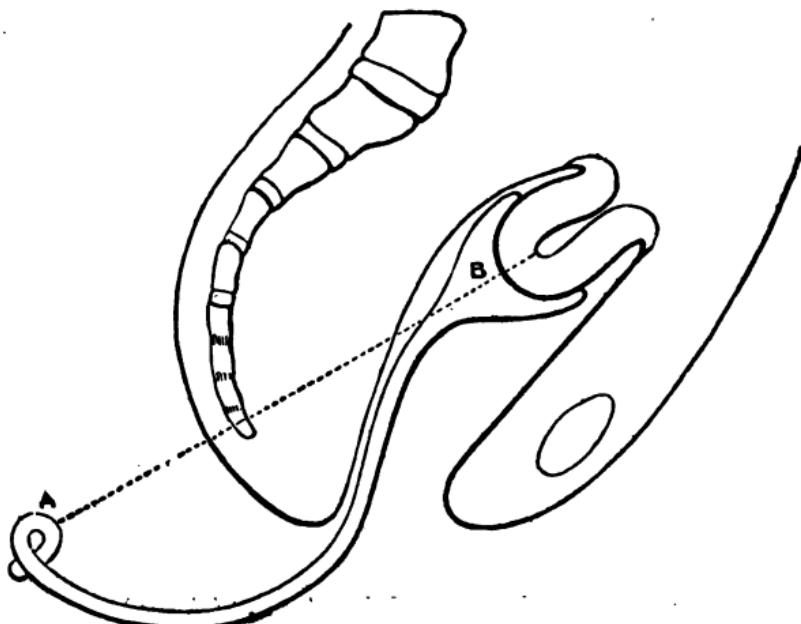

Fig. 84.—Aveling's repositor for inversion of the uterus.

waist-belt, which is prevented from slipping down by straps over the shoulders, and the repositor, which consists of a cup carried on a stem. The stem has a curve, which prevents it from pressing on the perineum; its lower end is in line with the central axis of the cup. To the lower end elastic bands are attached. The cup receives the fundus uteri in its concavity. Then, while an assistant holds the repositor in place, fasten the elastic bands to the waist-

belt. The continuous pressure thus exerted usually replaces the uterus within forty-eight hours. If the cervix uteri can be dilated, inversion can be manually reduced. I have in a thin subject dilated the cervix by pressure through the abdominal wall, and then replaced the uterus. Others have opened the abdomen to do it.

How a submucous fibroid becomes a polypus.—When the thickness of muscular tissue between a fibroid and the uterine muscular tissue is less than that between the tumour and the serous covering of the uterus, the effect of uterine contractions will be to press the tumour towards the uterine cavity. When the tumour so protrudes that its equator lies free in the uterine cavity, the uterine contractions tend to expel it from the uterine cavity. But the uterus cannot deliver itself of a tumour as quickly as of a baby, or an abortion, because the tumour is held back by its attachment to the uterus. The efforts of the uterus tend to stretch and thin this attachment into a stalk. When this is sufficiently done, the tumour dilates the internal os and then the external os and descends into the vagina. Having a stalk, it is called a " polypus."

Production of inversion by a fibroid.—Sometimes as the tumour is driven down it drags the fundus uteri after it. When it has dragged the fundus down through the internal os, then with each contraction the fundus itself will be nipped and forced farther down till the inversion is complete.

Structure of fibrous polypi.—They often contain irregular spaces in their interior filled either with mucoid fluid or with blood. They are in the beginning covered with columnar epithelium, like that of the uterine body ; but when the tumour descends into the vagina, the mucous membrane at the lower part of the tumour becomes swollen, œdematous,

purple in colour, and ecchymosed. Further, friction against the vagina leads to transformation of the columnar into squamous epithelium. Later, the mucous membrane often atrophies.

With fibrous polypi there is generally a long history of hæmorrhage and discharge. Severe pain is not present unless there be some complicating condition.

Characters.—A fibrous polypus (after removal) is a round, ovoid swelling, in size from that of a hazel-nut to that of a fœtal head. I have never seen one smaller than a hazel-nut, and a larger tumour than a fœtal head could not descend into the pelvis.

Gangrene.—Bearing-down efforts on the part of the patient may force the fibroid out of the vagina, so that it hangs outside the vulva supported by its pedicle. When this happens, the pedicle being not only stretched, but compressed by the vulval orifice, the circulation may be stopped and gangrene result, beginning at the part farthest from the stalk and extending upwards. We find the patient with a soft, stinking mass outside the vulva, attached by a pedicle running up into the uterus. In such a case the absorption of chemical poisons produced in the dead tissue may prove fatal. If the patient survive, the polypus will be spontaneously separated and the patient will be cured. If the polypus be cut off, she will get well sooner.

Adhesions.—The tumour and the adjacent surface of the vagina may adhere. Then you will be unable to feel a stalk. Such adhesion is not met with in small tumours. The size, the elasticity, the roundness of the tumour, the absence of any breaking down, will make you think it a fibroid ; and you will suspect it comes from the uterus and proceed to break down the adhesions. A vaginal fibroid lies under the mucous membrane.

Fibroid with inversion.—The only cause of inversion of the uterus that we know of, except parturition, is the traction of fibroids. Therefore, if your polypus has a very thick stalk, remember that it may be attached above to the inverted uterus, and make sure by the sound and by bimanual palpation that no inversion is present. If with a polypus there is inversion of the uterus, carefully separate with fingers or blunt instruments the tumour from the uterus.

Polypus with prolapse.—In some cases a fibroid causes prolapse of the uterus. The kind of prolapse caused is remarkable in that it is prolapse of the uterus alone, without the bladder or rectum.

Treatment of a fibroid polypus.— The treatment of a fibroid polypus is to remove it.

(1) If it be not larger than a Tangerine orange, seize it with forceps having broad fenestrated and serrated blades, and twist it round until its pedicle is broken through.

(2) If the tumour is larger than this, pass the index finger of your left hand up to the stalk of the tumour, and with it as your guide pass up blunt-pointed scissors curved·on the flat, and cut through the stalk of the tumour. Then·seize· with a strong volsella and extract it.

(3) The tumour may be so large that you cannot get your finger up far enough to guide the scissors. Pull the tumour down with a volsella, and cut out with scissors the piece which the volsella has grasped. Then seize and cut away another piece, and thus remove the tumour in bits. Champneys has devised an instrument for punching out bits of the tumour (Fig. 85). By this it can be piecemeal removed more quickly than with scissors. The bleeding is trifling. It is not necessary to do anything to the pedicle. The operation is safe, although tedious.

Fibroids of the cervix. — But a fibroid may grow in the cervix, either outwards, projecting into the broad ligament, or inwards, towards the cervical canal, in which case it projects inwards and downwards.

Cervical fibroids growing outwards.— They are distinguished by their roundness, their hardness, and their oneness with the cervix. But such a fibroid, if large enough to reach the pelvic wall, may be difficult to distinguish from a mass formed by salpingo-oöphoritis, an abscess in the broad ligament, or malignant disease of an ovary. The diagnosis is described in Chapter XVII. If such a tumour goes on growing, it may push the uterus to the opposite side of the pelvis and become incarcerated in the pelvis.

Cervical fibroid growing inwards.— Such a tumour is not surrounded at its neck all the way round by the cervix uteri, as is a polypus or inverted womb. Its pressure on the opposite wall of the cervix converts the os ex-

Fig. 85.—Champneys' uterine tumour punch forceps.

ternum into a long slit, bounded externally by a
narrow, tense band. The sound will pass into it
for the full distance. Bimanually, the body of the
uterus will be felt in its natural position above the
tumour.

Such fibroids generally cause hæmorrhage, though
not such great bleeding as fibroids growing from the
uterine body. They cause leucorrhœa and some-
times bearing-down pain and frequency of micturi-
tion.

If a cervical fibroid grows too big to be accom-
modated within that space, it pushes the body of the
uterus up into the abdomen. Cervical tumours so
large as this are rare. They generally cause symp-
toms before they get so big, and as their diagnosis
is not difficult they are generally found out.

Treatment of cervical fibroids.—Make an
incision over the face of the tumour which is turned
to the cervical canal. Feel for the situation of the
capsule, and when you have found it, shell out the
tumour with the fingers. This can usually be done.
If the tumour is too big for this, remove it piecemeal
in the same way as a large polypus.

Sarcoma of the cervix is rare. It is com-
moner in children than in adults. In the adult it
has been seen as a flat, ulcerated new growth ; as a
papillary growth ; and as a round lump like a fibroid.
The latter is the form that here concerns us. It
has generally been taken for a fibroid. The only
differences that I know of are that a sarcoma is
more vascular and quicker in growth.

Treatment.—The tumour is easily enucleated.
On section, its softness and vascularity should lead
to microscopic examination. When the nature of
the growth has been ascertained, extirpation of the
uterus is called for.

CHAPTER XXIV

HÆMORRHAGE CONNECTED WITH EARLY PREGNANCY

SUPPOSE now a different case : slight enlargement of the body of the uterus, accompanied with great hæmorrhage.

Causes of uterine enlargement with bleeding.—This enlargement may be due to—

> Threatening abortion.
> Molar pregnancy.
> Retained secundines after abortion.
> Cancer or sarcoma of the body of the uterus.
> Adenoma of the body of the uterus.
> Submucous fibroids.

Early pregnancy.—If the patient be pregnant, the uterus will be pear-shaped, not flattened from before backwards as in the unimpregnated state, and it will be elastic and symmetrical. If the uterus is bulged out in irregular nodosities, then the case is not one simply of pregnancy. The body of the uterus may be enlarged by a single fibroid, and the shape may not appreciably differ from that of a pregnant uterus. The cervix in pregnancy is softened ; in fibroids it is not. Hegar has described a sign of pregnancy that results from this softening : viz., that the tissue near the internal os is so softened that the globular swelling of the uterine body may feel as if it were almost disconnected from the cervix uteri.

In pregnancy the colour of the cervix goes on getting deeper red throughout, till at the end it is a dark bluish purple ; in fibroids it is the same colour as the buccal mucous membrane.

Dilatation of the cervix.—Cases are rare in which without first dilating the cervix you can get your finger far enough to make a diagnosis. In copious hæmorrhage with enlargement of the uterus, the proper course is to *dilate the cervix.* You may give ergot first if the patient is averse to local treat-

Fig. 86.—Hegar's dilators.

ment ; but if this fails, time should not be wasted, but the cervix dilated at once.

How to dilate the cervix.—There are two ways of dilating the cervix of the unimpregnated uterus : a rapid method by Hegar's dilators, and a slow method by tents.

Rapid dilatation with Hegar's dilators.—Hegar's dilators are best made in one piece, for if the handle and body of the dilator are glued together they are apt to come apart when washed in warm water. The point of the dilator should be shaped like the small end of an egg (Fig. 86). The patient must be anæsthetised. Fix her in the lithotomy position with Clover's crutch. Douche the vagina

with 1–2,000 sublimate solution. Seize the cervix with a volsella.

You can generally begin with No. 6 dilator. Anoint the dilator with the glycerine of sublimate solution 1–2,000 over its whole length. If there is no resistance to its passage, pass in the next size, and so on. As soon as you reach a size which encounters resistance, let it stay until the cervix has so relaxed that it fits loosely. This it usually will do in a minute or two, and then you can pass the next size. In a case well suited for this method, such, for instance, as one of hæmorrhage with pregnancy, or retention of secundines, half an hour will be enough to dilate up to No. 17,* and a canal which will admit this dilator will admit a finger of average size.

Dilatation by tents.—The laminaria or sea-tangle tent takes about twelve hours to double its thickness. It can overcome a pressure of 500 pounds on the square inch. The best *laminaria tent* is a piece of laminaria unworked, not planed off into a cylindrical shape. One piece of laminaria, although it will not make the cervical canal admit the finger, yet will make it so large that it can be easily expanded farther with Hegar's dilators.

Put the patient on her left side. Give a vaginal douche of 1–2,000 biniodide solution. Pass a sound and measure the length of the cervico-uterine canal. Shorten the piece of laminaria until its length is the same. (Cut a shallow groove in it with a knife, and you can then easily break it.) Put the laminaria in a 1–2,000 solution of sublimate in glycerine, so that it is covered by it, and let it lie there a minute. Seize the anterior lip of the cervix with a volsella, and pull it down. Guided by the left forefinger, pass the tent into the cervical canal. This done, press the

* The numbers indicate the diameter in millimetres.

cervix back, so as to put the uterus in a position of anteversion. In this position the pressure of the posterior vaginal wall will prevent the tent from slipping out. Put a plug of cotton-wool, tied round with a piece of string, and soaked in sublimate glycerine, in front of the cervix, so as to keep it back.

The next day remove the tent. Wash out the vagina with 1-2,000 sublimate solution. An anæsthetic is necessary for the thorough exploration of the cavity of an enlarged uterus.

Exploration of the uterus.—The object of dilating the cervix is twofold : first, to find out the condition of the uterine interior ; secondly, to treat it.

The anæsthetised patient must be in the lithotomy position. Put one hand on the abdomen and press the uterus down. Pass the fore or middle finger into the cervical canal. Combining the two hands, press the finger up and the uterus down. The hand on the abdomen should be pressed down into the pelvis *behind* the uterus.

Pregnancy.—You may find the uterus *pregnant*, the cavity containing a soft loose bag. As abortion is inevitable, pass the finger all round the uterine wall, so as to detach everywhere the chorionic villi. Then introduce a pair of suitable forceps, seize the detached structures, and extract them. Do not conclude that the uterus is empty until your finger has explored every part of the interior. Wash out its interior with 1-2,000 biniodide solution. Tell the patient to keep her bed for at least a week, and give her thirty minims of the liquid extract of ergot three times a day.

Retained secundines. — When a woman aborts, often the chorion or placenta or a bit of them is left behind. When this happens, hæmorrhage exceeding normal menstruation in frequency and amount goes on so long as the retained fœtal product

is in the uterus. If germs of putrefaction have not reached the inside of the uterus, there are no symptoms beyond hæmorrhage and discharge. If germs have been introduced, the retained bits will decompose, and sapræmia, endometritis, septicæmia, or uterine phlebitis and pyæmia will be the result. In some cases the retained bit is expelled spontaneously, but you cannot count upon this. After retention of the entire chorion or placenta, spontaneous expulsion is the rule ; after retention of a piece only, the exception. But the danger attending its removal, if done properly, is so slight that it is always better to remove a retained piece of chorion or placenta without delay.

"Placental polypus"; "fibrinous polypus."—A round lump, made of chorionic villi and blood-clot, has been called a "*placental polypus*." A lump of clot may feel like a polypus, and has been called a "*fibrinous polypus*."

Whether the lump that keeps up bleeding after a miscarriage is placenta, or placental polypus, or fibrinous polypus, detach it with the finger, grasp it with forceps, and remove it. Then scrape away the decidua with a blunt curette.

Chorion - epithelioma (Figs. 87, 88, 89).— "*Chorion-epithelioma*" * is a malignant tumour arising after delivery or abortion. Clinically it is characterised by the occurrence soon after the pregnancy of irregular hæmorrhages, progressive cachexia, sometimes fever and rigors. There is a tumour within the cavity of the uterus which breaks down, infiltrates and destroys the uterine tissue. Metastatic growths rapidly occur, which are most common in the vaginal veins and the lungs. The new growth originates in the chorionic

* Teacher, *Journal of Obstetrics and Gynæcology of the British Empire*, 1903, vol. ii.

epithelium or its forerunner the trophoblast. Histo-
logically it presents a complex picture, owing to the
numerous modifications which the component cells
undergo. The most typical elements are (1) small
well-defined polyhedral cells, with large vesicular
nuclei, closely packed together in masses without
any connective tissue ; these correspond to Langhans'
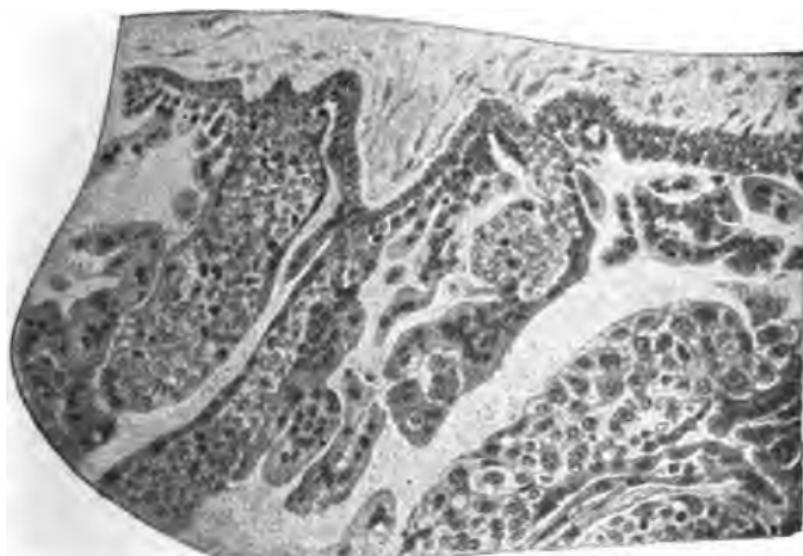
Fig. 87.—Small portions of a villus showing the origin of tumour
from the epithelium ; the continuity of the various cell-
formations with one or other layer is obvious. Karyo-
kinetic figures are numerous in the Langhans' layer cell-
masses. (*By permission of Dr. Teacher.*)

layer. (2) Large multinucleated irregular masses
of protoplasm in which no definite cell boundaries are
recognisable. These correspond to the syncytium.
(3) Large cells, some resembling decidual cells, some
like the multinucleated giant cells which occur in the
decidua serotina. These are in parts arranged in
cell masses without intervening stroma, in other
parts infiltrating and destroying tissue stroma.

Between the cell masses are seen the remains of the normal tissues, and much blood, sometimes clotted, sometimes fluid. The tumour has no connective tissue stroma or blood-vessels of its own. Its characteristic feature is the way it attacks and burrows into the normal tissue, especially the blood-vessels.
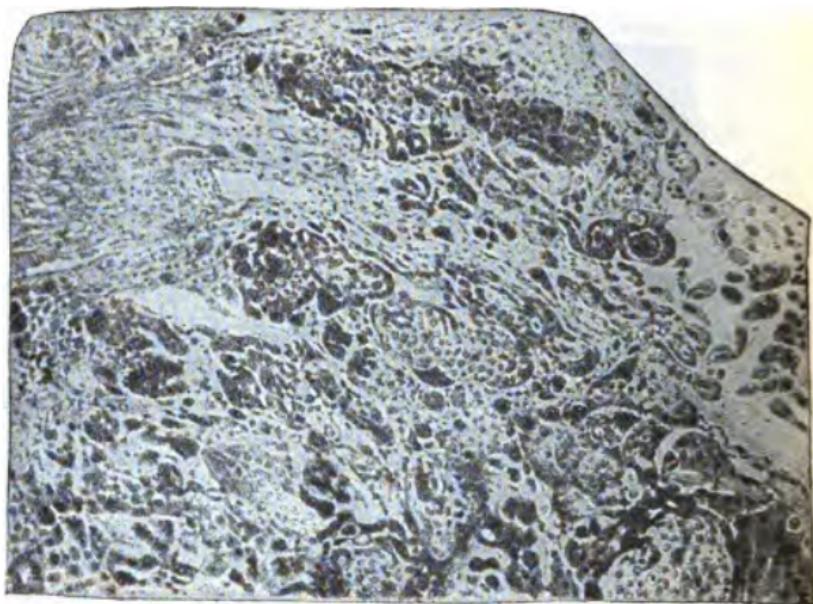
Fig. 88.—Typical masses of chorion-epithelioma invading the uterine muscle. The tumour tissue is distinguished by its darker shade. The remains of uterine muscle among the tumour produce a sort of alveolar structure. The dark masses with many nuclei are the syncytium. Here and there detached masses of it are seen, some of which simulate hypertrophied muscle-fibres. (*By permission of Dr. Teacher.*)

Hence the hæmorrhage and the mode of dissemination.

Tumours containing precisely similar structures occur in other parts of the body than the uterus, and in either sex. The explanation is that they are teratomata.

Fig. 89.—A uterine blood-vessel invaded by tumour. The attacking cells have appeared under the endothelium at two points, and large wandering cells of intermediate character have also crept round to the other side of the vessel. The uterine tissues show reactive round-celled infiltration. In the vessel, at a point where the endothelium has already broken down, there is a small thrombus. There is also a clump of tumour cells. (*By permission of Dr. Teacher.*)

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Chorion-epithelioma is especially apt to follow pregnancy with a hydatidiform mole.

The possible presence of this rare disease should lead to the rule carefully to examine with the microscope all substances removed from the uterus. If chorion-epithelioma be present, the only chance of saving the patient's life is in hysterectomy without delay.

CHAPTER XXV

ADENOMA OF THE UTERINE BODY

So-called " fungous endometritis " is an adenomatous growth. There are two forms of adenoma of the body of the uterus: the *polypoid,* and the *hyperplastic* or diffuse.

The **polypoid form** is sometimes spoken, of as " endometritis polyposa," " metritis interna villosa," " mucous polypus of the body of the uterus," " fungoid degeneration of the endometrium," or " uterine fungosities." The presence of these growths excites a little inflammation of the endometrium ; but the main morbid change is not inflammation, but new growth. In this disease there are outgrowths from the mucous membrane of the body of the uterus. They are from the size of a pea up to an inch in length. There may be only one, or the uterine cavity may be filled with them. When examined microscopically, they are found to consist of gland tissue, healthy except as to quantity ; vessels ; and connective tissue between, this tissue being looser in some places than others, and in some quite myxomatous. Some consist mainly of gland tissue ; in others the connective tissue preponderates. They thus resemble, as to their structure, the common mucous polypus of the cervix.

Malignant adenoma. — When these outgrowths are large, they are often malignant, grow fast, and return after removal. There is no way of distinguishing a malignant from a benign adenoma,

except by watching the case and observing the rapidity of growth and its return after removal. If rapid recurrence take place the uterus should be removed.

The diffuse form. — In the *hyperplastic* or diffuse form there are no localised outgrowths, but the whole lining membrane of the uterus is thickened, softened, and easily detached. The finger can detach the mucous membrane in large pieces. The structure is like that of the polypoid form ; overgrowth of healthy gland tissue and vascular connective tissue between.

Etiology.—We know nothing of the etiology of either the polypoid or the diffuse form.

Physical signs.—In both forms there is some expansion of the uterine cavity, and therefore enlargement of the whole uterus ; but the cavity seldom measures more than three inches and a half long. The uterus is movable. There is, as a rule, no disease of the uterine appendages, or of the cervix.

Symptoms.—The symptoms are hæmorrhage and discharge. The hæmorrhage often produces serious anæmia. It bears no relation to the number or size of the fungosities. The hæmorrhage may keep nearly to the monthly period, being then prolonged and excessive ; it may come on irregularly, or it may be almost continuous. Between the hæmorrhages there is generally discharge, not purulent, but watery and pink. The disease generally occurs in women who are absolutely or relatively sterile. There will be such remote symptoms as anæmia produces.

Diagnosis.—This cannot be made without exploring the uterus. When the finger is in the uterine cavity you feel in the *hyperplastic* form the thick, soft mucous membrane, perhaps coming away in large pieces merely from the movement of the

finger. This might be taken for an early pregnancy. If this be the nature of the case, the amnion will be identified by its thinness and transparency. A uterus lined with the decidua of an extrauterine pregnancy presents a close resemblance to one containing a diffuse adenoma ; therefore in any such case examine carefully not only the uterus, but the ovaries and tubes. In the *polypoid* form you feel the polypoid growths in the uterine cavity. They will be distinguished from fibroids by their greater softness and their being more easily detached.

Fig. 90.
Curette recommended by the author.

It is not possible before removal and examination to distinguish an adenomatous polypoid growth from a small placental or fibrinous polypus. or from " chorion-epithelioma." If there be a history of abortion. the nature of the growth may perhaps be suspected. If it be the remnant of a miscarriage, the prognosis is more favourable than if of any other nature.

The diagnosis between a *simple* and a *malignant* adenoma cannot be made with certainty. All that can be said is that. the larger the growth, the more careful should the prognosis be.

KROHNE & Cº LONDON.

Treatment.—The treatment is the removal of the diseased endometrium by scraping away as much as possible with the curette, and destroying the rest with caustic. The best *curette* is one which is blunt and rigid (Fig. 90).

Seize the cervix with the volsella, and draw it down. Then with the curette scrape the anterior and posterior uterine walls, so as to detach as thoroughly as possible the lining membrane. This is often enough. It is probable that greater security against recurrence is obtained by destroying the superficial part of the lining membrane with iodised phenol. Then take a piece of cotton-wool in the grasp of a pair of speculum forceps, so that it forms a mop. Dip it in the drug, and pass it through the cervical canal up to the fundus, and there press it against the uterine wall on all sides.

This treatment does not invariably cure, but it does so in most cases. Cases in which there is one single outgrowth are the most favourable. Should relapse occur, the treatment must be repeated, or the uterus removed. These patients have often reached an age at which the preservation of the uterus is not of moment.

CHAPTER XXVI

CANCER OF THE CERVIX

HÆMORRHAGE may be the first symptom of malignant disease of the uterus. There are rare forms ; namely, cauliflower excrescence, corroding ulcer, and malignant adenoma. I shall describe first the pathology, diagnosis, and treatment of the common · cancer, viz., cancer of the cervix.

The etiology of cancer.—*Age :* Cancer of the uterus is most common between thirty-five and fifty. *Heredity :* Every constitutional peculiarity is inherited ; but a tendency from one parent may be neutralised by a peculiarity derived from the other. Hence in a few cases only of cancer can an inherited predisposition be traced. *Childbearing :* Cancer is especially apt to occur where there has been persistent local irritation. During labour the cervix uteri is apt to be damaged. The oftener such damage occurs—that is, the more children a patient has— the more liable becomes the cervix uteri to be the seat of cancer. Lacerations of the cervix do not cause cancer. Cancer is not commoner with deep lacerations than with slight ones, and very rarely develops in the angles of cervical rents.

Histology of uterine cancer.—I can only briefly summarise this. Three forms of malignant disease occur in the uterus.

1. **Malignant adenoma** (Fig. 91). — This differs from healthy gland tissue and from simple or benign adenoma only in its quantity and the

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diminution of the interglandular tissue. If adenomatous growth is abundant and recurs after removal, the uterus should be removed. This form is rare, only met with in the body of the uterus.

2: **Squamous-celled carcinoma or epithelioma** (Fig. 92).—This begins with proliferation of squamous epithelium, which, as it grows, sinks down

Fig. 91.—Malignant adenoma, highly magnified. (*After Gebhard.*)

Note the columnar gland cells lying back to back, only separated by small remains of stroma.

like a plug into the subjacent tissue. These plugs, if cut lengthways, appear as finger-like processes ; if cut across, they look like nests or pearls of epithelium. The superficial first-formed cells soon die and break down. This kind of cancer is most frequent on the vaginal portion, less so in the cervical canal, least common in the body of the uterus.

3. **Columnar - celled carcinoma.** — This begins with overgrowth of the cylinder epithelium

of the glands of the body of the uterus, of the cervix, or of the gland tissue of an erosion. The cells do not always divide parallel to the cell basis, but divide sometimes at right angles to it, so that the newly formed cells do not lie side by side as in normal columnar epithelium, but lie on the top of one
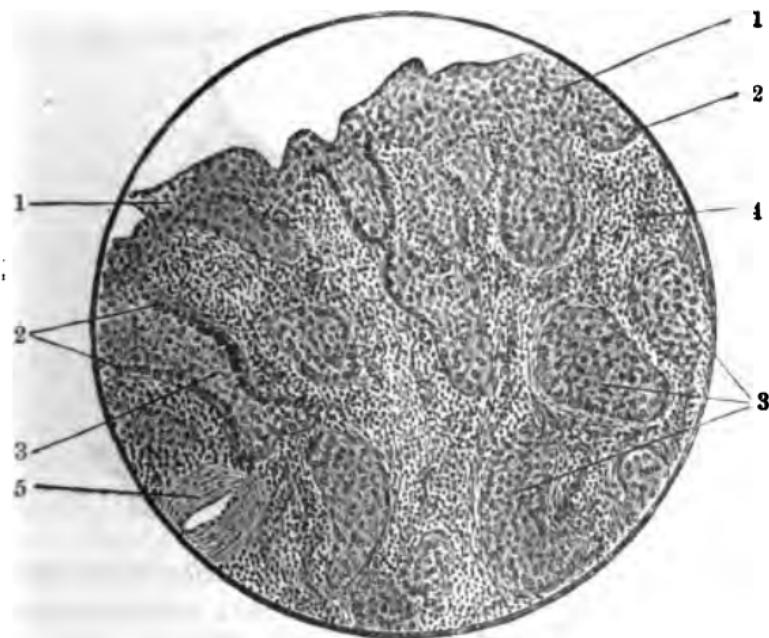
Fig. 92.—Pavement epithelioma of vaginal portion.

1, Surface epithelium with epithelial plugs sinking down into the deeper tissue; 2, border epithelium as yet regularly arranged and deeply staining; 3, cancer plug and nests; 4, interstitial tissue infiltrated with small cells; 5, vessel.

(By permission, from Orthmann's "Vade Mecum für histopathologische Untersuchungen in der Gynäkologie.")

another, the epithelium thus coming to be many-layered. The cells also become shorter, flatter, more nearly cubical, and at length polymorphic. Plugs of this structure grow down into the tissue beneath it, and as they do so the more superficial early-formed

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growth dies and breaks down. This is the kind of cancer most often present in the body of the uterus : it also occurs in the cervix: it is rare on the vaginal portion. When the glandular structure is long preserved, this form is often spoken of as *adeno-carcinoma.*

Clinical classification of cancer.— There are clinically three forms : (1) cancer of the vaginal
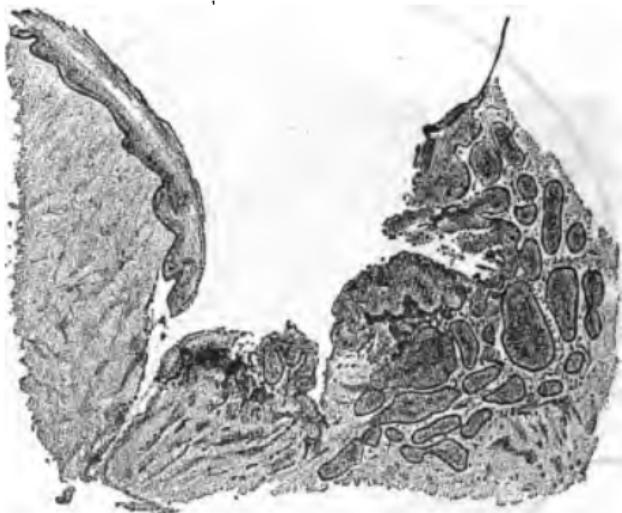
Fig. 93.—Carcinoma of vaginal portion. (*After Gebhard.*)

Note on left of figure healthy epithelium ; on right, plugs of epithelial growth sinking down into tissue of vaginal portion, and epithelium broken down.

portion ; (2) cancer of the cervix ; (3) cancer of the body.

Cancer of the vaginal portion. — This means cancer beginning in the mucous membrane which lies between the os externum and the junction of the vagina with the cervix uteri, and is covered with pavement epithelium. The cancer spreads along the surface over the vaginal portion and along the vagina, looking like a flat granular patch (Figs. 94, 95) ; or, beginning like a wart, grows down into the vagina like a polypus ; or it may spread up the

cervical canal. It does not tend to spread into the cellular tissue until it has widely attacked the vaginal portion. As this is a part that can be felt and seen, the cancer can be found out as soon as the patient asks advice. If it is recognised early, we can remove the whole disease, and cure the patient.

The true cauliflower excrescence.— The very rare disease known as "*cauliflower excrescence*"
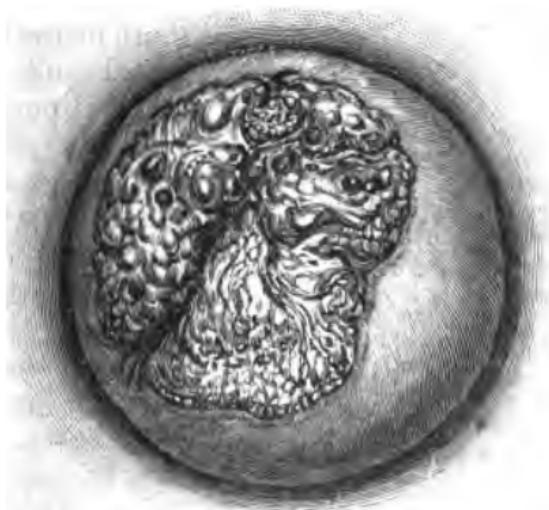
Fig. 94.—Cancer of vaginal portion. (*Drawn by Burgess, from a patient of the Author's.*)

is a form of cancer of the vaginal portion. It grows down into the vagina, forming a very soft growth hanging in fringes, something like myxomatous disease of the chorion, and having a narrow stalk. After removal, the tumour loses its firmness, and becomes a flocculent, pulpy mass like a macerated placenta. Our knowledge of its histology consists of one case. It is a squamous epithelioma.

Cancer of the cervix begins in the glands of the cervical canal, more commonly at the lower

part (Fig. 95). It may form a nodule in the cervix, or a warty growth into the canal, or a mass bulging at the os externum. Cancer may be present at the upper part of the cervical canal without out any sign of disease at the external os. Or, cancer may be present both in the cervical canal and on the vaginal portion.

This form of cancer tends to grow outwards, towards the cellular tissue, which is soon invaded. Hence, unless the disease is found out early, radical treatment is impossible. This form of cancer, when the patient is examined in the usual way, may not be accessible to touch or sight, and hence it is seldom recognised early enough for radical treatment. This is the most unfavourable kind of uterine cancer.
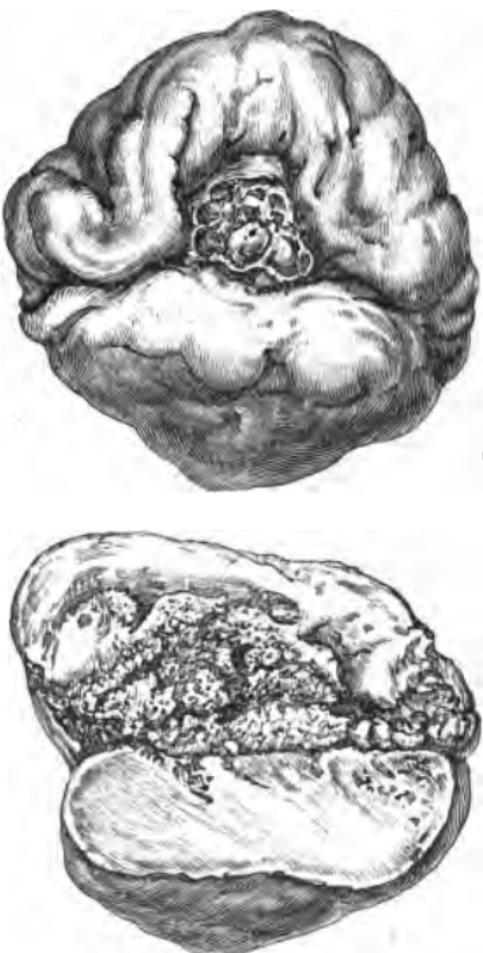
Fig. 95.—Cancer of the cervix, from below and on section.* (*By permission of Sir J. Williams.*)

* This patient remained free from recurrence at least eleven years after amputation of the cervix.

The spread of cancer.—As it grows, (*a*) the cancer invades vagina, bladder, rectum, ureters, peritoneum, and ovaries. The vagina is attacked in four-fifths of all cases; the bladder in two-fifths.

(*b*) The lymphatic vessels from the vulva and lower third of the vagina run to the *inguinal* glands. One from the body of the uterus follows the round ligament to an inguinal gland. Hence the inguinal glands are involved in cancer of the vulva or lower third of the vagina, and occasionally in cancer of the body. The lymphatics of the cervix uteri and of the middle and upper thirds of the vagina run to the *iliac* glands. The lymphatics of the uterine body and fundus run to the *lumbar* glands. In uterine cancer, so long as the uterus is movable, it is rare for the glands to be diseased. After adjoining parts have been invaded, disease of the glands only occurs in about one-third of the cases. When the disease recurs after removal, it is rare for the recurrence to be in the glands.

(*c*) Secondary or metastatic growths are rarer, and occur later, in cancer of the uterus than in any other form of cancer. They occur in less than 10 per cent. They are mostly in the liver, next often in the lungs, after which in frequency come the kidneys. Secondary growths have been seen in the stomach, bowel, thyroid, brain, suprarenals, skin, gall-bladder, heart, breast, muscles, and bones; but all these are rare.

The breaking down of cancer.—Cancer sooner or later breaks down; that is, the older part of the growth disintegrates. Big sloughs are rare, but have been seen. This breaking down is characteristic of cancer, and it does injury, making holes where there ought to be continuity. The time at which it occurs varies. Sometimes it occurs so early that the cancer is an ulcer almost from the beginning,

sometimes so late that the cancer may form a mass of such size and hardness (Fig. 96) as to block the cervical canal and prevent the contents of the uterine body from getting out.
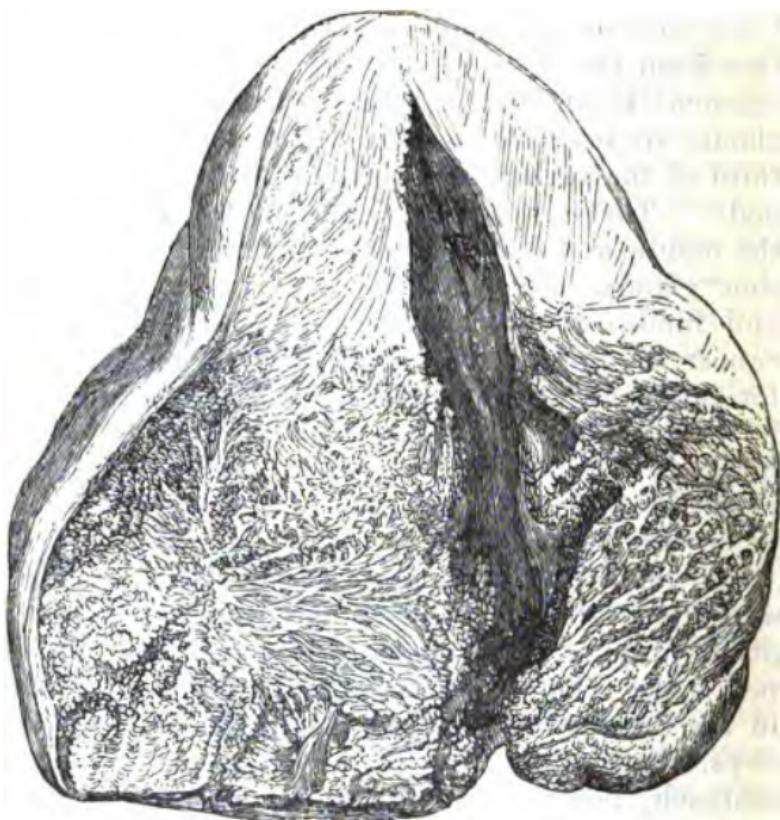

Fig. 96.—Showing great enlargement from cancer of the cervix and lower part of the body of the uterus. (*From a specimen in the Museum, St. Bartholomew's Hospital. Robert Barnes.*)

The symptoms of cancer.—*Hæmorrhage* is generally the earliest symptom. Early in the disease there is no feature of the hæmorrhage from which its cause can be inferred; local examination alone can reveal this. Therefore *any unusual hæmorrhage in a*

woman who has had children should be a reason for local examination.

Discharge is present in the intervals between hæmorrhages. In the beginning it is described as "whites." It begins to stink when the discharge contains fragments of decomposing tissue. Its characters are valueless in diagnosis. But discharge may be the first symptom. Therefore *any unusual discharge in a woman who has had children should be a reason for local examination.*

Pain.—Pain is an early symptom in about half the cases. Sometimes it comes late; sometimes it is absent. It is usually felt in the lower belly, sacral region, groins, and down the thighs. It is more felt on the left side than on the right; when limited to one side, it is the left side six times as often as the right.* The preponderance of pain on the left side is because the nervous system on that side is more sensitive. The pain often keeps the patient awake. Pain and bleeding are often in inverse proportion to one another, because bleeding relieves congestion, and congestion causes pain. Later in the disease, when it has spread beyond the uterus, special kinds of pain may arise, dependent on the direction of spread.

Wasting.—This is always present, but the time at which it is noticed by the patient is variable.

Incidents of the spread of cancer.— As the cancer grows, it extends into the *cellular tissue* and the *peritoneum*. Hence the uterus becomes fixed, and attacks of local peritonitis occur.

When the cancer grows forwards it extends into the *bladder*. In time it breaks down, and in about one-sixth of the cases a vesico-vaginal fistula is formed before death occurs. In many the disease compresses the ureters, and leads to death

* *See* Champneys, *Obst. Trans.*, vol. xxii.

by uræmia. Sometimes the disease blocks the urethra, causing retention of urine. The passage of a catheter in such cases causes intolerable pain, so that patients with growth in this place welcome the making of a vesico-vaginal fistula.

Cancer often grows backwards, invading the rectum, and also setting up cellulitis round it. There are constipation, ulceration of the rectum, bleeding from the bowel, even obstruction of the bowels. Ulceration of the rectum may produce recto-vaginal fistula.

A not infrequent terminal complication of uterine cancer is compression and thrombosis of an iliac vein, leading to œdema.

Cancer may spread so that it attacks *nerves.* Then pain and muscular spasms may be the result.

The bleeding which cancer causes makes the patient *anæmic.* Hence she becomes liable to neuralgic pains. Fatty degeneration of the heart may take place and lead to sudden death. The drain of albuminous fluid may bring about *lardaceous disease* of liver and kidneys.

Changes in the uterine body with cancer of the cervix.—With cancer of the cervix the body of the uterus is almost always enlarged. Cancer of the cervix may set up endometritis. If the cancer be late in breaking down, blood or pus may for a time be pent up in the uterine cavity, and distend it; the conditions known as hæmatometra and pyometra.

Modes of death from uterine cancer. — The patient may die from hæmorrhage. Cancer usually kills by gradual wasting and exhaustion. The complications which hasten death are the following: peritonitis, local or general, ulceration and inflammation of the bowel; acute cystitis, pyelitis, and uræmia; pulmonary embolism from detachment

of a clot in venous thrombosis ; pyæmia from phlebitis ; bed-sores ; pneumonia and pleurisy from secondary growths in the lung ; sudden failure of heart from fatty degeneration. Putrid emboli may lead to gangrene of lung.

Duration of uterine cancer.—The average duration of life in uterine cancer is about eighteen months. Individual cases depart widely from the average.

Importance of early diagnosis of cancer.—The one thing of supreme importance for the treatment of cancer is early diagnosis ; and for this reason : Secondary growths, either in lymphatic glands or in other parts of the body, occur later and more seldom with cancer of the uterus than with cancer of any other part. There is, therefore, a better prospect, if cancer of the uterus be removed, of freedom from recurrence than in any other form of cancer. The obstacle to success in the treatment of cancer is that in most cases the disease is not diagnosed until the disease has extended beyond the uterus. Cancer of the vaginal portion can be diagnosed earlier than any other form. Cancer of the cervix is seldom recognised early ; it more rapidly spreads beyond the uterus than either of the other forms. Cancer of the body remains limited to the uterus longer, and therefore is longer amenable to treatment.

Value of the history in diagnosis.— The patient's age ought not to influence opinion in the slightest degree. The first symptoms of cancer are usually hæmorrhage and leucorrhœa ; pain and wasting come later. The hæmorrhage caused by commencing cancer has about it nothing distinctive, either as to time, duration, or quantity. There is nothing peculiar about the pain of cancer. Some cases of cancer run their course without pain. Slight

loss of flesh may come from causes other than cancer. Sometimes cancer patients for a time gain weight. The nature of the disease cannot be determined without local examination.

Local changes produced by cancer. — Cancer, wherever it occurs, displays the following features :

1. It is a growth, therefore the part it attacks is enlarged.

2. It breaks down. Sooner or later this always happens.

3. The new growth and the breaking down are never limited by any anatomical boundary.

Apply these general statements to the uterus.

1. The cervix is enlarged. If the body of the uterus is affected it is enlarged.

2. It is ulcerated because the growth breaks down. Its edges are the places at which the breaking down is going on. Hence its edges are everted and often undermined.

3. The cervix is fixed because the growth invades all tissues.

We have to apply the first two of these criteria before the third has had time to develop. A new growth on the vaginal portion which tends spontaneously to break down is cancer.

1. **Cancer of the vaginal portion.**—When this begins as an outgrowth from the surface it may look like a growth of warts, or granulations, on the vaginal portion. The surface feels uneven, or even rough. It is harder than the soft, velvety erosion, and has a sharper edge. It soon begins to show signs of breaking down. There are ecchymoses here and there ; and if breaking down is rapidly going on, small spots of greyish slough will be seen. It bleeds when touched. It is friable ; you can break away fragments with a curette.

2. **Ingrowth below the surface.**—The first evidence of its presence is an angry livid red spot.* The colour depends upon the vascularity caused by the new growth, and its tendency to break down, which leads to minute hæmorrhages into the growth before the breaking down is enough to make a breach of the surface. When the cancer spot is rubbed it bleeds. A dark red spot, bleeding on contact, should make you suspect cancer. This is the earliest stage that has been observed.

Diagnosis from " granular erosion."— The only other new growth that is seen on the surface of the vaginal portion of the cervix is the so-called " granular erosion." This condition is a flat adenomatous growth. This may surround the os externum, or be limited to one lip. There is no abrupt change in the level of the surface. An erosion slopes off gradually into healthy tissue. A line defining the edge of the growth would have to be wavy, and interrupted in places, for within the scarlet new growth we find islets of healthy mucous membrane, and outside it we find dots of scarlet new growth outside the main patch. Its whole surface is of the same colour. It is soft, and easily made to bleed, by rubbing it with wool to clean it. But there is no ecchymosis, no excavation, no sign of sloughing; and it is not friable.

Other conditions which may be taken for cancer.—*Red patches on the cervix.* — The remains of erosions which have got well. These patches are red only, not livid; and do not bleed on contact.

Shotty follicles in cervix.—Follicles filled with retained secretion, and feeling like shot embedded in the surface I have known taken for cancer. But these blocked-up follicles, when looked at through

* Williams, " Cancer of Uterus," p. 9.

the speculum, are, if their contents are unaltered, pearly grey or yellow in colour. There is no lividity, and not the slightest appearance of breaking down.

Fibroid.—A fibroid is distinguished by its smoothness, its hardness, its rounded outline, and it does not break down or bleed on contact. It has its own circumscribed capsule. There is no excavating ulceration or warty outgrowth.

Spiegelberg's sign.—The feel of a cancerous cervix has been compared to that of passing the finger over wet indiarubber. This peculiar feeling is not present in every case, nor present throughout the whole course of each case ; and therefore its absence is no proof that the disease is not cancer ; but, when present, it should cause grave suspicion of cancer.

Chancre.—It has been suggested to me that a chancre, or condylomata on the cervix, might be taken for cancer. A chancre shows no sign of new growth, nor condylomata of breaking down. Induration is not appreciable on the cervix. The presence of secondary symptoms elsewhere and the effect of treatment would settle the diagnosis.

Cancer of the cervical canal.—Cancer may begin in the cervical canal. If it begin high up, it cannot be recognised early unless the cervix is dilated. If it begin low down and the external os has been enlarged by tearing during labour, then cancer can be recognised here as early as when it begins on the vaginal portion. The condition which causes difficulty in diagnosis is that in which the cervix presents " hardness with big-grained roughness " at the lower part of the cervical canal ; and if, in addition, the patient has hæmorrhage, leucorrhœa, pain, wasting, the diagnosis of cancer may suggest itself. The macroscopical differences of this condition from cancer are—that it does not show any tendency to break down ; there is no ulceration, no point of sloughing

anywhere ; it is not friable ; and that this condition of " hardness with big-grained roughness " extends over an area of the cervix so considerable that cancer, if advanced enough to occupy such an extent, would certainly have begun to break down.

If symptoms suggest cancer, and nothing is perceived by finger and speculum to account for them, the suspicion can be confirmed or negatived only by dilatation of the cervix. This done, the finger in the cervix will either feel the firm, smooth ridges of the arbor vitæ, or there will be at some part of the canal a friable growth.

The microscope in diagnosis.—A diagnosis based on the microscopical examination of sections of tissue must be made by an expert. The judgment of even an expert on a scraping, or a broken-off bit, is of no value unless it be in the affirmative. Cancer may be present, and yet the bit examined may not be cancerous. If you have to remove a large piece of a cervix in order to see whether there be cancer present in it or not, it is better to remove the suspicious part altogether. There are growths occasionally met with in the uterus, called malignant adenomata, which resemble cancer as to their clinical history, but which microscopically present none of the characters of cancer. The naked-eye characters and behaviour of the growth should be taken into account as well as its histology ; and if the two conflict, the behaviour of the growth is the more trustworthy.

The effect of treatment.—In case of doubt, the behaviour of the suspicious part under treatment is a test. An erosion or a thick inflamed cervix may bleed on contact ; but if one of these conditions is the only morbid change present, one or two applications of strong carbolic acid will so far improve the local condition that the diseased part will cease to

bleed on contact. If the disease be cancer, these applications will stimulate its growth. Hence never prolong such experimental treatment.

Cancer high up in the cervical canal.— In this situation the beginning of cancer cannot be seen or felt, and therefore it is impossible to diagnose it early. This form of cancer advances so fast, and its initial symptoms are so slight, that we seldom have the opportunity of diagnosing and treating it early.

Treatment of uterine cancer. — There is only one way of curing uterine cancer, and that is by its removal. The prospect of cure by its early removal is greater than can be offered in any other form of cancer.

How to judge whether uterine cancer can be removed.—Is the uterus freely movable ? —(1) Fix a volsella or hook in the cervix, and try to pull it down to the vulva. If you cannot do this the broad ligaments are probably invaded. (2) Holding the cervix down, put your finger in the rectum, and feel the utero-sacral ligaments to see if they are thickened. If you can pull the cervix down to the vulva, and you feel no thickening of either utero-sacral ligament, you can remove the cancer.

Cancer of vaginal portion. — If cancer is limited to the vaginal portion it can be removed by amputation of the cervix. But total extirpation is easier and safer. The partial operation has a difficulty and danger of its own—viz., that in the partial operation the uterine arteries are secured, but not the ovarian ; and hence often there is oozing troublesome to stop. In complete extirpation both uterine and ovarian arteries are secured. Stenosis and atresia sometimes follow. Hence obstructive dysmenorrhœa, followed by hæmatometra ; and possibly endometritis and salpingitis.

Cancer of the cervix. — Cancer in this situation is seldom found out early enough for its removal. But you may get such a case. In these cases prefer extirpation of the uterus. When the cervical canal is excavated by cancer, it is thinned, and it may be so thinned as to break when you pull it down to detach it from the body. This will make it more difficult to get away the upper part of the disease.

The operation. — The following instruments are required :—

Clover's crutch.
Paquelin's cautery.
Sharp spoon (Fig. 97).
Four volsellæ.
Six Wells's large pressure forceps.
Ligatures and aneurysm needle with large curve.
Toothed dissecting forceps.
Two pairs of scissors.
Duck-bill speculum.
Retractors.
Sponges, sponge-holders, macintoshes, iodoform, and insufflator.

Put the patient in the lithotomy position.

Preparation of the cancer. — If particles of the cancer be inoculated into the wound they will grow. Therefore begin the operation by scraping away with a sharp spoon the friable surface of the cancer ; and then with Paquelin's cautery thoroughly burn the whole surface of the cancer.

Fig. 97.
Sharp
spoon.

Detachment of the cervix.—Seize the cervix with two volsellæ. These instruments must on no account touch the wound. Therefore do not remove them. Pull the cervix down to the vulva. Ascertain the line of vaginal reflexion by grasping the mucous membrane and noting the line at which you begin to be able easily to pull it from the uterus. Then with scissors cut through the mucous mem-
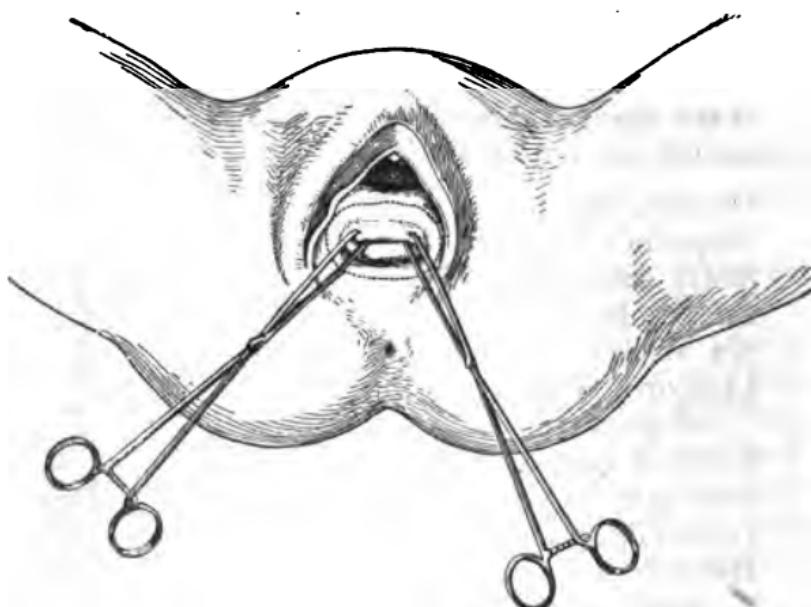
Fig. 98.—First step in hysterectomy : division of vagina round cervix. (*After Doyen.*)

brane behind. Then open the pouch of Douglas. Put in your fingers and tear it open until the opening is as large as that in the mucous membrane. Now pull the cervix down and back so as to bring the anterior vaginal wall within reach. Cut transversely through the mucous membrane, at a point just below where you can pull it freely away from the uterus, and extend the incision until it meets the one behind (Fig. 98). In the centre cut through the cellular

tissue quite down to the muscular wall of the uterus.
Then with the fingers strip the bladder and ureters
off the uterus and broad ligaments, taking care to
separate them extensively at the sides (Fig. 99).
Extend the incision through the mucous membrane
freely to the side.   Upon this extensive lateral separa-
tion depends the safety of the bladder and ureters.
The uterus is now free in front and behind, attached
by ligaments at the sides.   Feel with the finger and

Fig. 99.—Separation of bladder and ureters from cervix.
(*After Doyen.*)

thumb in front and behind each broad ligament
where the uterine arteries are, and free the cervix
uteri by cutting through the tissues on each side
nearly, but not quite, up to the uterine arteries.
If you do not cut these important vessels, the bleed-
ing will not be formidable.

Ligature of the uterine arteries.—Take a
blunt-pointed needle, curved like an aneurysm
needle, and of such size that the terminal part is
about an inch and a half long.   Pass the needle

(threaded with strong catgut) through the broad liga-
ment above the artery, keeping it about a third of an
inch from the uterus.   Tie the ligature as tightly as
you can.   Do the same on the opposite side.

Bringing out the uterus.—Cut the cervix
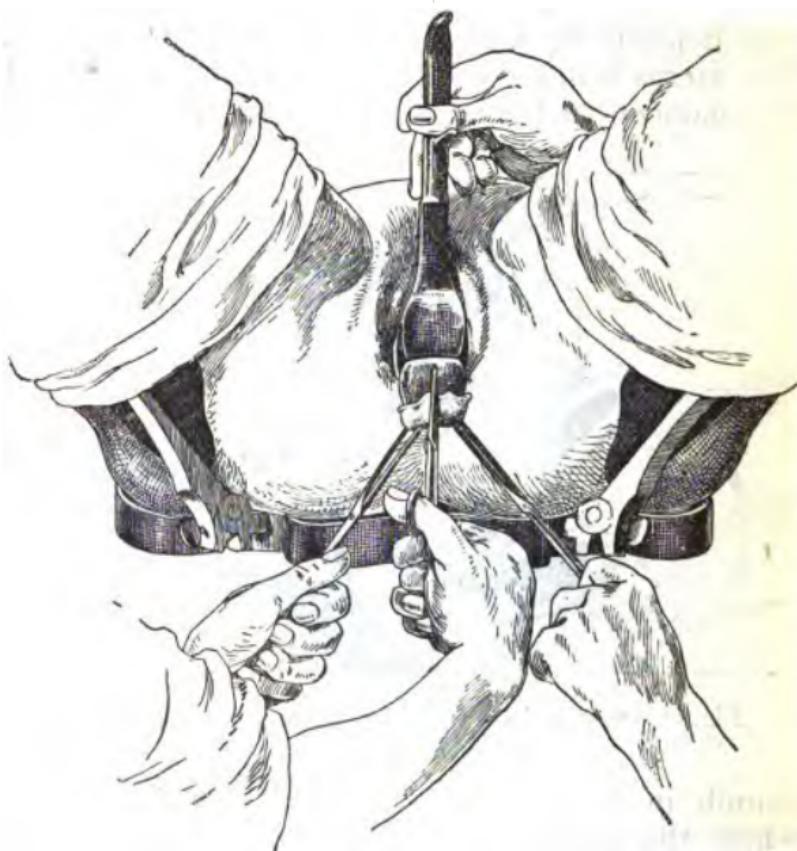
Fig. 100.—Hemisection of uterus commenced.   (*After Doyen.*)

uteri free on each side, taking care not to cut too
close to the ligatures.   Then with scissors cut in the
middle line up the anterior wall of the cervix and
body of the uterus (Fig. 100).   As you cut, seize
higher and higher parts of the uterus with volsellæ,
and so pull it further and further down (Fig. 101).

The fundus uteri will easily slip out (Fig. 102).   You
now have the uterus outside the vulva, attached
by its body to the upper part of the broad liga-
ments.   Transfix a broad ligament with a double
ligature.   Tie it with two interlocked stitches.   Then
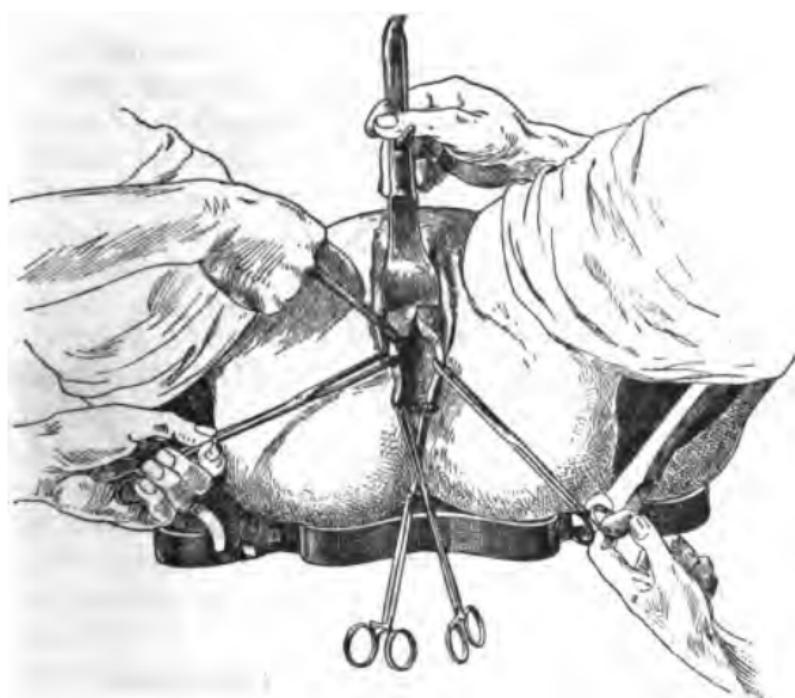
Fig. 101.—Hemisection of uterus in progress.   (*After Doyen.*)

cut the uterus free, taking care to leave enough tissue
to prevent the ligature from slipping.   The uterus
is now attached only by one broad ligament.   Tie
this in like manner, and cut the uterus away.   Cut
the ends of the ligatures short after tying them.
During the operation hold the cervix by volsellæ,
and avoid touching it with the fingers or letting it
come into contact with the cut surface of the vagina.
Do not use to cut away the uterus the same scissors

with which (in bisecting the anterior wall) you cut through the cancer.

Dangers of the operation.—The risks of this operation are three :—(1) *Septic poisoning.* This is to be prevented by antiseptics. (2) *Hæmorrhage.* This is to be prevented by ligatures or pressure forceps.
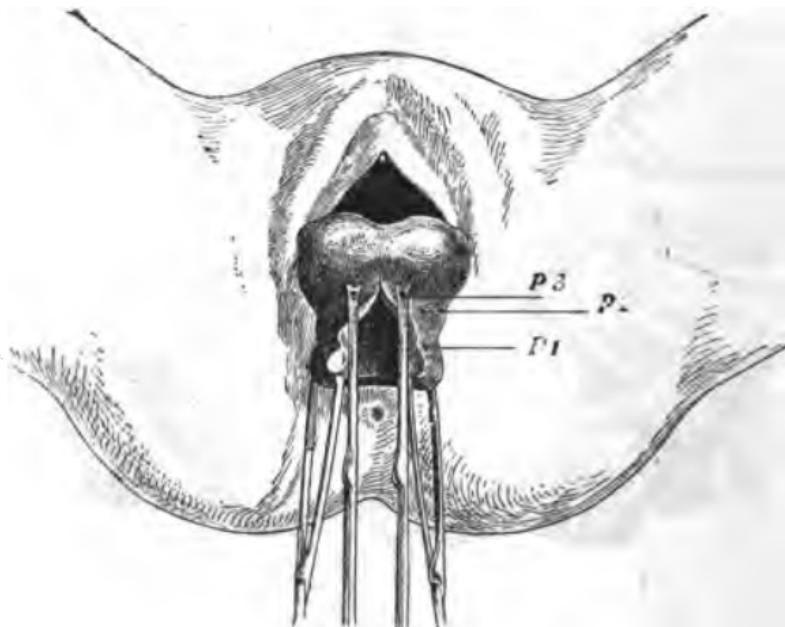
Fig. 102.—Uterus brought outside. (*After Doyen.*)
P₁, P₂, P₃, sites of successive grasps of volsella.

(3) *Injury to bladder or ureters.* This is to be prevented by separating the parts in front widely at the sides. If known to be wounded the wound should at once be stitched up.

Proportion of cures.—The result as to cures has been that from one-fourth to one-fifth of the subjects of the operation remain free from recurrence for three years. The mortality from this operation is low.

Removal with the cautery·—Dr. Byrne of

New York * advocated in 1893 the use of the cautery in severing the uterus from its attachments, and Dr. Herbert Spencer in this country has adopted the practice. It is claimed that by this method accidental inoculation of the wound surface is made impossible ; that a slight extension of growth outward from the uterus is destroyed ; and that therefore permanent cure is more frequent.

Wertheim's operation. — Wertheim † has shown that there are a few cases in which, when the patient is first examined, the disease is found to have extended into the cellular tissue, and yet the extension is so localised that the cancer in the cellular tissue can be shelled out and removed along with the uterus, with permanent cure as the result.

This can only be done by abdominal section. After opening the abdomen, the operator must separate the bladder from the uterus, and dissect out the ureters, taking care not to deprive them of the sheath of cellular tissue in which their blood-vessels run. Then the ovarian and uterine arteries must be tied near their origin. Douglas's pouch is now opened, and the peritoneum forming the posterior fold of the broad ligament lifted up. Then the cancer in the cellular tissue is enucleated, and removed with the uterus. If there are any enlarged glands they are removed also ; but if the cancer has extended to the glands recurrence is practically certain. This operation is a difficult one ; its mortality is at present higher than that of vaginal hysterectomy.

Palliative treatment of cancer. — Much good can often be done by the surgical treatment of cancer too advanced for complete removal.

Scraping. — When the cancerous uterus is fixed and hæmorrhage and discharge are profuse, you may

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* *American Gynecological Transactions*, vol. xvii.
† *Brit. Med. Journal*, 1905, vol. ii.

promise benefit from scraping. The patient being anæsthetised, scrape away as much as you can of the friable cancer tissue with a Simon's sharp spoon. This done, burn away with Paquelin's cautery the wall of the cavity made by the spoon as far as you can with safety. The effect of this is to lessen bleeding and discharge, and therefore to retard the advance of cachexia.

The relief of pain.—There is only one drug which can be relied on to relieve severe pain, and that is morphia. It acts best when combined with atropine and injected under the skin. You may give morphia liberally, seeing that the natural course of the disease is to cause death before morphia-taking has had time to produce any very bad effects. Morphia relieves not only the persistent pain of cancer, but the bladder and bowel irritation, and the pain felt in micturition and defæcation.

Lessening of discharge and of fœtor.— The amount of discharge can be lessened by astringent injections, such as zinc chloride (gr. v.–x. ad Oj.), acetate of lead (ʒj. ad Oj.), alum (ʒij. ad Oj.) ; and its fœtor can be diminished by antiseptic douches, such as carbolic acid (1 in 40), peroxide of hydrogen (1 in 10, or stronger), permanganate of potash (ʒj. ad Oj., or stronger). Frequent syringing and washing, and an unlimited supply of clean napkins or pads, are essential for the reduction of fœtor.

Corroding ulcer of the uterus.—This is a rare disease. It consists of an ulcer on the cervix, which spreads, destroying as it does so all the tissues in its way (Fig. 103). It thus clinically much resembles cancer. But microscopic examination has failed to find any structures like those of cancer or epithelioma in it. The base of the ulcer is formed by the tissues of the part with some round cells. The ulceration does not advance by the separation

of large sloughs, but by slow destruction of the
tissues at its edge.   The surface of the ulcer is never
ash-grey or sloughy in appearance, but dark red and
easily bleeding.   There is no appearance of new
growth at its edge.   The progress is slower and its
course longer than that of cancer.   It is not attended
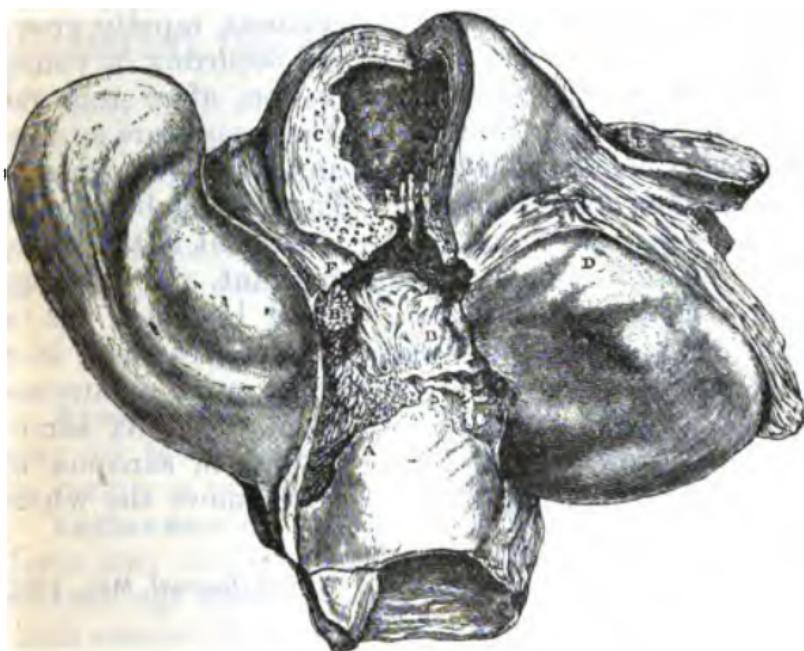
Fig. 103.—Corroding ulcer.   (*After Sir J. Williams.*)

A, Vagina ; B, ulcer, exposing subperitoneal fat ; C, uterus ; D, bladder ;
E, broad ligament ; F, vesico-uterine cellular tissue.

with such emaciation as is usual in cancer, and it
causes but little pain.   Pain, when severe, is usually
not till late in the disease, and is then paroxysmal,
and due to accumulation of discharge in the body
of the uterus.   There is discharge, either purulent,
muco-purulent, blood-stained, or, if it has been
retained, offensive ; great hæmorrhage is not usual.
The disease seldom attacks patients before the

climacteric. The disease, although not cancer, is clinically malignant; that is, incurable and leading to death. The only treatment is to keep the part clean. We know nothing of its pathology.

Sarcoma of the cervix.—Sarcoma of the cervix such as could be taken for cancer is rare. But a few cases have been described, by competent observers, of soft, papillary, œdematous, rapidly growing outgrowths from the cervix, occurring in young subjects, which upon examination after removal proved to be sarcomatous. * These cases are so rare that it is not possible to make any general statements about their clinical history. They would be usually taken for cancer, and, as the treatment is the same, the mistake would be unimportant. At a very early stage such a tumour might be taken for a mucous polypus, but if the case were watched, in a short time either rapid growth or quick recurrence after removal would reveal its nature. As sarcomatous growths are often multiple, in sarcoma of the cervix it is sound practice to remove the whole uterus.

* *See* Roger Williams, *British Gynæcological Journal*, May, 1897.

CHAPTER XXVII

MALIGNANT DISEASES OF THE UTERINE BODY

WE may find, when the cervix is dilated, that the inside of the uterine body is rough ; that there are warty and friable outgrowths, or ulceration, or both. We have to do with one of the forms of malignant disease of the body of the uterus. These are *cancer, sarcoma,* and *malignant adenoma.*

CANCER OF THE UTERINE BODY

Frequency.—The frequency of cancer of the body of the uterus, as compared with cancer of the cervix, is as 1 to 50.

Influence of age.—Cancer of the body of the uterus may occur at almost any age. But the most common age seems to be rather later than that at which cancer of the cervix is common.

Childbearing.—Cancer of the body does not appear to have any relation to childbearing. It occurs as often in the nulliparous as in those who have had children.

Influence of local irritation.—Local irritation probably plays the same part in the production of cancer of the body of the uterus that it does in the production of cancer elsewhere.

The circumscribed form.—Cancer of the body of the uterus is usually described as occurring in two forms—the circumscribed and the diffuse. In the *circumscribed* form the disease occurs as
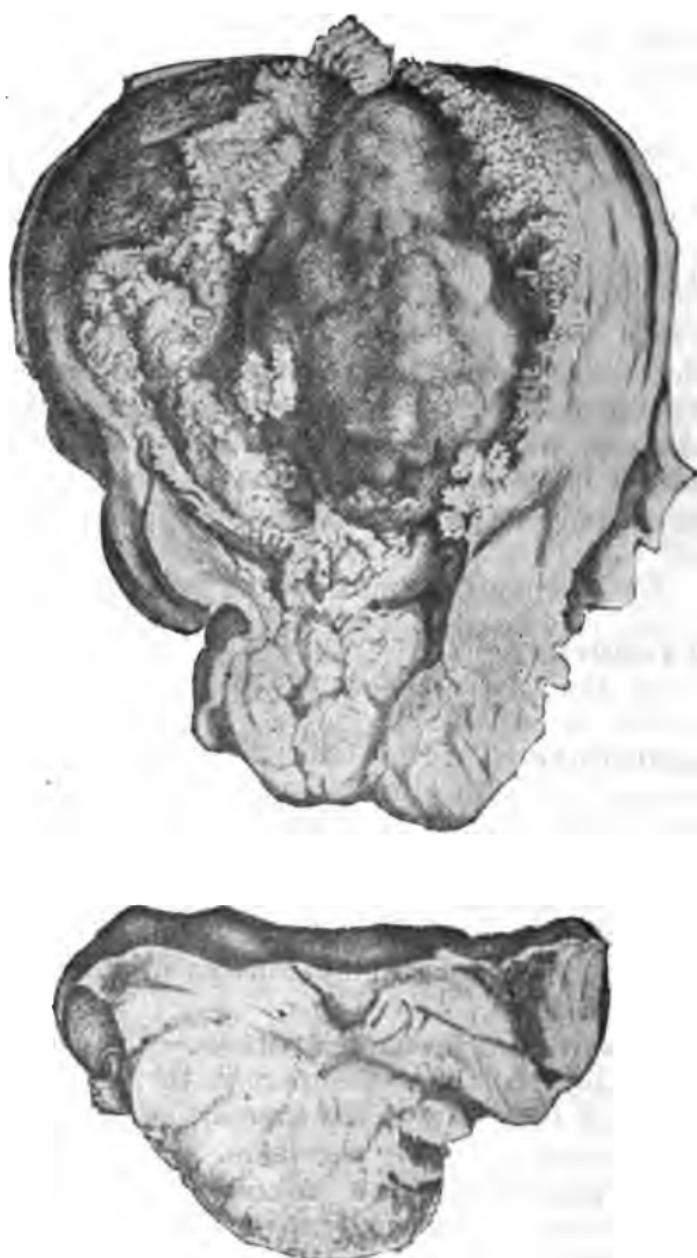
Fig. 104.—Cancer of uterine body.   (*After Sir J. Williams.*)

round nodules in the uterine wall (Figs. 104, 105).
But they have never been found without disease of
the mucous membrane over them.
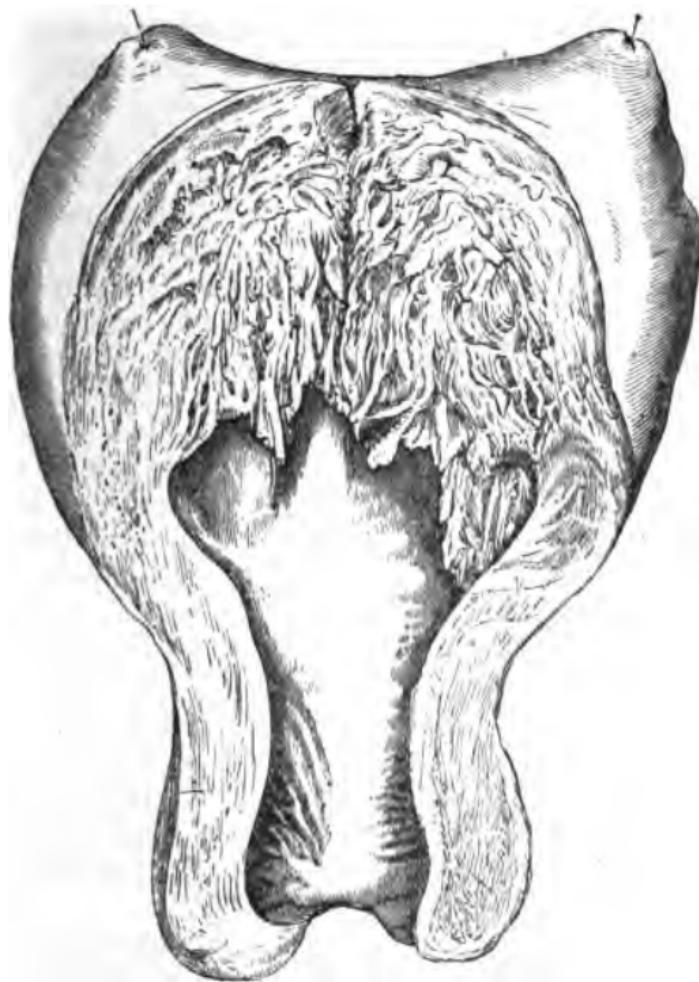
Fig. 105.—Cancer of uterine body. (*From a specimen in the
St. George's Hospital Museum. After R. Barnes.*)

Diffuse form.—In the *diffuse* form the whole
interior of the uterus is lined with villous or warty
growths. The disease probably begins at one or

more spots, and may therefore be said to have been circumscribed in the beginning. But there appears to be this difference, that while in the circumscribed form the disease tends to grow deep into the uterine wall towards the peritoneum, in the diffuse form it tends to spread over the mucous membrane. It usually stops at the internal os; but, when advanced, may spread down the cervix.

Enlargement of the uterus.—Cancer of the body usually is accompanied with enlargement of the organ. There is a specimen in the Museum of the London Hospital in which the uterus is small.

There is a rare form of uterine cancer in which the disease produces great diffuse thickening of the uterine wall. In one specimen the uterus measured 8 in. in length, and weighed $4\frac{1}{2}$ lbs. (Fig. 106). It was examined by a competent histologist, and its structure found to be that of hard cancer. Villous or polypoid growths may distend the uterine cavity. Simpson depicts such a polypoid growth enlarging the uterus till it was 7 in. long by $3\frac{3}{4}$ in. wide. Such growths may first enlarge the uterus and then break down, and by progressive infiltration and ulceration convert the uterus into a sac with thin, rigid walls; and the ulceration may go on till it eats through into the peritoneum. Cancer may also lead to retention of discharge and dead tissue in the uterine cavity, and distension of the uterus.

Secondary cancer of the uterine body.— The body does not become affected by extension from the cervix till late. But it is important to remember that such nodules may be present before cancer of the cervix is far advanced. As a mucous polypus of the cervix may become cancerous, so may a mucous polypus of the body. Cancer may also attack the mucous membrane covering a fibroid,
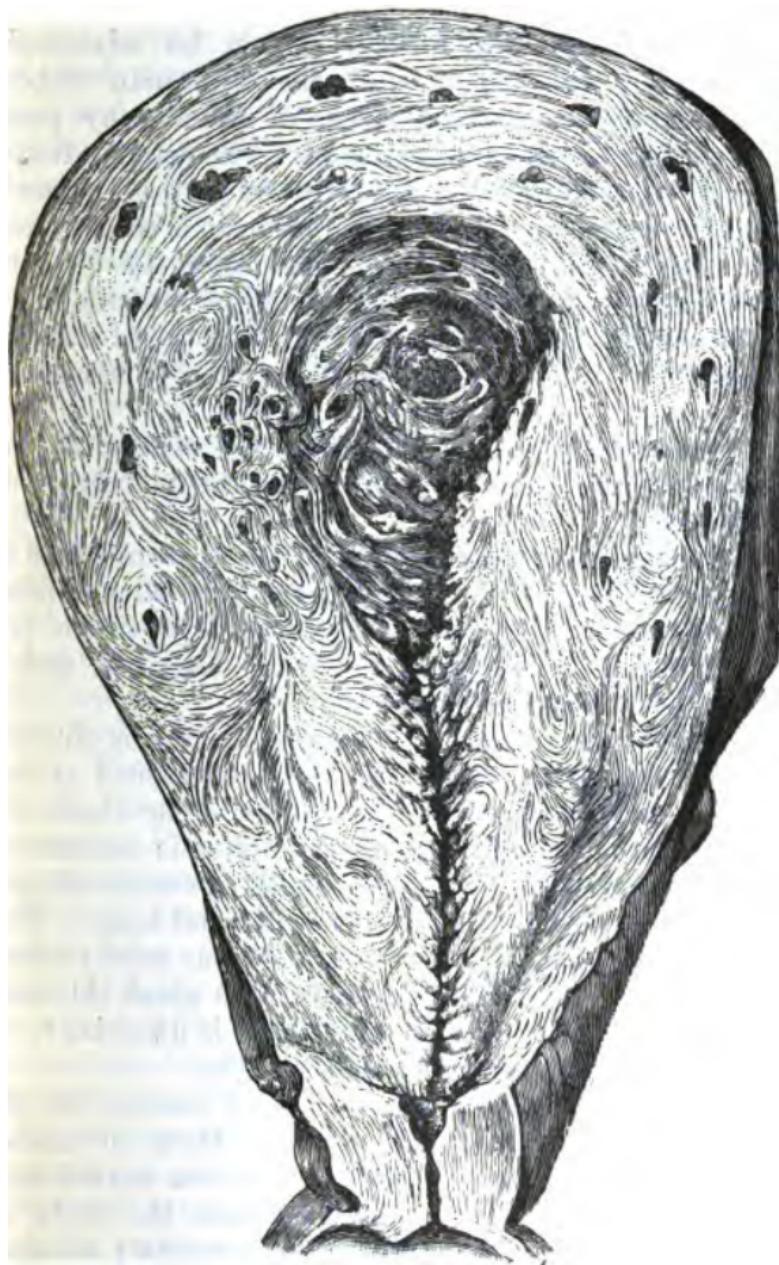
Fig. 106.—Cancer, with great enlargement of uterine body. (*By permission of Sir J. Williams, from a specimen in St. Bartholomew's Hospital Museum. Reduced.*)

and then invade the fibroid. When far advanced, it involves the cervix and the Fallopian tubes. Secondary growths may occur in almost any part, the vagina being a frequent seat. The cellular tissue is not usually affected till late—a fact of importance in treatment. For this reason it is uncommon for cancer of the body of the uterus to lead to blocking of the ureters, and therefore uræmia as a mode of death is not common in this form of cancer. Death by peritonitis is commoner than in cancer of the cervix.

Histology.—Cancer of the body of the uterus begins in the epithelium either of the glands or of the surface.

Malignant adenoma.—In one form there is a sort of " tangle " of gland tubes lined with columnar epithelium, with scanty connective tissue between them. This form has been described under the title of *malignant adenoma*.

Alveolar cancer.—The second form is *alveolar cancer*. In it the glandular acini are widened at the expense of the interglandular tissue. The character of the epithelium is changed, the lumen is contracted by heaping up of many layers of cells of various shapes and sizes, but of squamous type, flat and large. The interalveolar stroma is formed of fibrous bands interlacing. In cases of hard cancer, with great thickening of the uterine tissue, the stroma is abundant, as compared with the epithelial growths.

Symptoms.—The symptoms of cancer of the body of the uterus much resemble those of cancer of the cervix, except that pain occurs earlier and is more severe. This is, first, because the body of the uterus is more sensitive than the cervix ; second, because the projection into the uterine cavity of masses of cancer, and of pieces of broken-down tissue, provokes painful contraction of the uterus.

If the cavity of the uterus be enlarged, fragments of dead tissue are likely to be retained and decompose and cause fœtor. If retention of dead tissue and discharge do not take place, then there is no fœtor. Hæmorrhage is usually the first symptom. Cachexia is rather later in onset than in cancer of the cervix.

Diagnosis.—The cervix should be dilated, and the interior of the uterus examined with the finger. Friable new growth will be felt. The diagnosis is made more sure by scraping away a piece and examining it microscopically.

Treatment.—The only cure in cancer of the body of the uterus is in the removal of the whole uterus. It should be done as early as possible. The test of its practicability is the possibility of pulling the uterus down to the vulva. The operation of vaginal hysterectomy has been described in Chapter XXVI. Three points of difference, from the operative point of view, between cancer of the body and that of the cervix may be pointed out. First, the larger the uterus the more difficult is the vaginal operation. In a case such as that shown in Fig. 106, the method of abdominal " panhysterectomy," which I shall describe in a subsequent chapter, would be more suitable. Second, recurrence takes place less often than after removal of cancer of the cervix, for cancer of the body can be removed without soiling the operation wound with cancerous tissue. Third, the uterus should not be split up the front as in vaginal hysterectomy, for if this is done the danger of inoculating cancer tissue upon a cut surface is increased. The uterus must be removed entire, and the first step should be to sew up the cervix as closely as possible, to prevent such inoculation ; and then to swab the cervix and vagina with a strong germicide solution, in order that any germs present may be killed:

SARCOMA OF THE UTERUS

Sarcoma is a growth which springs from connective tissue, while cancer springs from epithelium. Two forms of sarcoma occur in the uterus—the circumscribed and the diffuse. A *circumscribed* sarcoma is in its early stages very like a fibroid. The diagnosis can only be made by the microscope. They are more vascular, brighter red in colour, softer and more friable than most fibroids. They sooner break down.

The *diffuse* form cannot be distinguished from cancer without the aid of the microscope. The uterine cavity is lined with outgrowths easily breaking down.

On microscopic examination, the fibro-muscular stroma of the uterus, at the edge of the growth, is seen to be penetrated, and in the middle of the growth replaced by masses of round or fusiform cells ; but there is no trace of gland tissue, as in cancer.

Symptoms.—The symptoms of a sarcoma resemble those of a fibroid and also those of cancer. There is hæmorrhage and leucorrhœa. There is pain. There is wasting, but patients with sarcoma do not usually waste so fast as those with cancer.

Treatment.—The treatment is to remove the uterus, if possible. In the circumscribed form you may find projecting into the uterus a tumour, not by the touch distinguishable from a fibroid. When removed, the tumour will not show the glistening white fibrous tissue of an ordinary fibrous polyp. If it looks at all different at any place from an ordinary fibroid, it should be examined microscopically. If the microscope shows the growth to be sarcomatous, the uterus should be removed. An ordinary fibroid, at first innocent, may undergo sarcomatous degeneration. This is a reason for examining any

part that differs from the ordinary appearance of
a uterine fibroid.

Recurrence. — Sarcomatous tumours recur.
The total duration of the disease has varied from
four months to ten years, the average being about
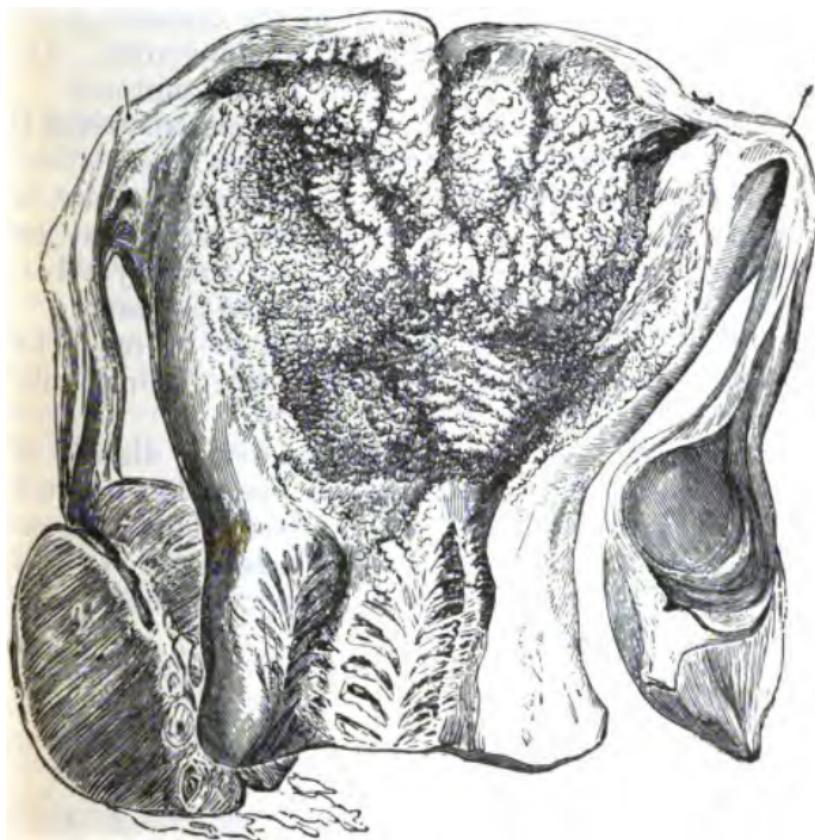
Fig. 107.—Tuberculosis of the uterus. (*From a specimen, No.
2,261*[75]*, in the Museum, Guy's Hospital. After R. Barnes.*)

three years. Secondary growths occur in other
organs, but not so frequently in sarcoma as in
cancer.

Tuberculosis of the uterus has produced
symptoms and physical signs something like those
J*

of cancer of the uterus, viz. discharge, hæmorrhage, wasting, with enlargement of the uterus, expansion of its cavity, and roughening of its interior (Fig. 107). Advanced tuberculosis of the uterus has been always associated with tubercular disease elsewhere. The uterus has been fixed, and the patient has been cachectic. Operative removal of the diseased pelvic organs has been useless as well as dangerous. The disease, in its early stages, causes no symptoms.

Morbid anatomy.—First, the endometrium is studded with miliary tubercles. These break down, and there is ulceration. Second, the cavity may be filled with cheesy pus (Fig. 107). The cervix may get blocked, and thus pyometra result. Primary tuberculosis of the cervix has been taken for cancer.

Diagnosis.—The diagnosis is to be made by finding tubercle bacilli in the discharge. For details, consult works on bacteriology.

Treatment.—If primary tubercular disease of the uterus is found out before the disease has infected any other part of the body the treatment is to remove the uterus and Fallopian tubes. As yet this has not been done often enough to justify any broad statement as to the result,

CHAPTER XXVIII

BLEEDING FIBROIDS

Hæmorrhage from fibroids. — The term "*fibroid*" is short, convenient, sanctioned by years of colloquial usage, and is not pathologically inaccurate.

Frequency.—These are the commonest tumours that women are subject to. Of the new growths which occur in women, about one-fourth are in the womb. Bayle found that in a hundred autopsies of women over thirty-five, fibroids were present in twenty. In most women who suffer from them, fibroids cause no trouble. This fact is important, because lately some have urged that every fibroid should be removed, whether it be causing trouble or not. Advise interference with a fibroid only if there are symptoms undoubtedly caused by the fibroid.

Etiology.—We know nothing as to the causes of fibroids. They occur chiefly between thirty-five and forty-five. They are rare before twenty-five.

Hard fibroids are the commoner. Their interior contains few vessels ; they get their blood supply from vessels which surround them. They lie in a distinct cavity, out of which they can be shelled. Large tumours are formed by an agglomeration of smaller ones. They consist mostly of fibrous tissue, and contain but little muscular fibre. They seldom grow after the menopause.

Red or *soft* fibroids are fibroids that have undergone a "necro-biotic" change something like that

which a macerated fœtus has undergone *in utero*. The red colour is due to the breaking up of red blood corpuscles and diffusion of the pigment. The tissue cells have lost their capacity for taking nuclear stains: The necro-biotic change begins in the centre of the tumour. Sometimes cystic cavities are formed. This change occurs in from 5 to 7 per cent. of fibroids. It appears to be favoured by pregnancy. Severe pain has been in these cases the most frequent indication for operation ; but it is not present in all, and there is tenderness only in a few.

From a clinical point of view fibroids are all alike in their beginning. When they get large enough to give trouble, they fall into two classes, which produce different symptoms, involve different risks, and require different treatment. These two classes are called the subperitoneal and the submucous.

Classification according to seat.—A fibroid begins to grow in the muscular wall of the uterus. As it gets bigger it projects on the peritoneal surface or into the uterine cavity, according to whether it began nearer the peritoneal or the mucous surface. In the former case it is called a *subperitoneal* tumour, in the latter a *submucous* one (Fig. 108). If it gets large before it comes to project much in either direction, it is called *interstitial*. I speak in this chapter of *bleeding* fibroids, whether interstitial or submucous.

Condition of the uterus with fibroids. —The uterine wall is thickened. Its muscular fibres are enlarged as in pregnancy, but to a less degree. The tumours themselves are poor in vessels, but the tissue around them is vascular, and often they are surrounded with venous plexuses. In older patients the uterine wall is sometimes atrophied. The uterine cavity is lengthened, and sometimes tortuous. Interstitial fibroids which enlarge the uterine cavity

cause hæmorrhage. When a fibroid projects into the uterine cavity the endometrium becomes hypertrophied. This has been called "endometritis," but there is no evidence of inflammation; the change is

Fig. 108.—Submucous fibroid. (*From a specimen in the Museum, Royal College of Surgeons. After R. Barnes.*)

Note the thinness of the uterine wall where the tumour is attached.

simply an overgrowth of glands, vessels, and interglandular stroma.

The growth of fibroids. — Most fibroids reach a certain size and then cease to grow, but we know not what regulates the size at which they stop growing. Fibroids grow slowly. They enlarge

during pregnancy, because they share the growth of their mother tissue the uterus. They involute along with it. It is generally believed that fibroids delay the menopause. After the menopause, fibroids, as a rule, cease to grow, and get a little smaller. Fibroids may undergo necro-biotic change after the menopause as well as before it.

The changes in fibroids during menstruation.—The uterus and tumour begin to enlarge after menstruation has ceased, until a few hours before menstruation recommences. Then decrease begins. The increase in size is due to the growth of the menstrual decidua and to the afflux of blood to the uterus which that growth attracts. When the growth of the decidua is complete, the uterus contracts and squeezes the blood out of itself (and the tumour which forms part of it) into the vessels of the broad ligament and the decidua, and hence the uterus gets smaller. The decidua becomes congested, and at length its overloaded vessels give way and blood escapes into the uterus. Later, blood appears at the vulva, and the patient becomes aware that menstruation has begun.

Natural cure of fibroids.—1. **Absorption.**—We know not why absorption takes place; we cannot foretell it.

2. **Expulsion.**—I have described this in Chapter XXIII. Cure may be naturally accomplished by the separation of the stalk and expulsion of the tumour; but it is usually completed by the surgeon, for if left to nature the patient may die during the process.

3. **Disintegration and gangrene.** — Fibroids sometimes spontaneously disintegrate and are expelled. A disintegrated fibroid presents at the os uteri as a tangle of fibrous bands. While the tumour is in the uterus, putrefactive germs do not get to it; hence

there is neither fever nor stinking discharge. But when it gets into the vagina, or if it be meddled with while inside the womb, the dead tissue becomes putrid, discharge becomes offensive and the patient feverish, from sapræmia. Hæmorrhage accompanies the process. Then shreds begin to come away. The process usually lasts from one to two weeks. If the tumour is so small that its expulsion is completed soon, the patient gets well, and is cured of her tumour. But if the tumour is long coming away, the patient may die (1) exhausted by discharge and bleeding ; (2) poisoned by sapræmia ; or (3) purulent endo-metritis may spread along the Fallopian tubes to the peritoneum,* and kill some weeks afterwards.

The treatment is to cut away the dead tissue as completely as possible with scissors, and to wash the passage with an antiseptic solution as often as may be necessary to prevent the discharge from becoming offensive.

A disintegrated fibroid may be taken for placenta.— The shreddy, fibrous tissue formed by a disintegrated fibroid feels very much like placenta. To avoid this error, notice the absence of the softening of the cervix, and the violet discoloration of the vulva, which are characteristic of pregnancy ; put your finger through the os, and you will come upon no fœtus. There will be no breast signs of pregnancy.

4. **Sloughing, without disintegration.**— Fibroids sometimes die in a lump, without breaking up. When a fibroid has thus died in a mass, sup-puration round it opens a path for its exit, and the uterus squeezes it out. It may force it into the vagina or into the peritoneum.

The only treatment is to remove the dead lump. If this is lying in the vagina, its removal is easy. Should it be in the uterine cavity, the treatment is

* *See* a case reported by Hurry, *St. Barth. Hosp. Rep.*, vol. xx.

to dilate the cervix until its canal is big enough to admit the finger and an instrument, and then cut the lump up and remove it in bits. If the dead lump is in the peritoneal cavity, it will be discovered and removed only by acting on the rule not to tap or aspirate a tumour of doubtful nature ; but if the symptoms are serious enough to demand interference, make an incision big enough to admit the finger and explore. If an opening in the belly wall has already formed, the obvious course is to pull the lump out, cutting it up if necessary.

5. **Fibroids and cancer.**—There is no clear evidence that fibroids make those who possess them more liable to cancer. But cancer may invade fibroids. (*a*) Cancer beginning in the epithelium either of the cervix or body of the uterus may spread into a fibroid. (*b*) Islands of cancer may grow in the middle of a fibroid. Generally these are secondary to growths elsewhere ; but some have been recorded in which at least the primary growth was not discovered.

Treatment of bleeding fibroids.—1. *Drug treatment.*—The only drug which certainly has power over bleeding fibroids is ergot. It makes the uterus contract, and so squeezes the vessels and the tumour. It may squeeze the tumour so much as to get it absorbed. I have seen it lessen the size of the tumour. The drug must be given continuously for months. The best form is the liq. ergotæ ammoniatæ, in doses of half a fluid drachm three times a day. Pills of three grains of ergotin are more convenient. Ergot will check the hæmorrhage in three cases out of four. It may be taken for from six months to two or three years. If there be no appreciable effect, the drug must be left off after a length of trial dependent on the amount of the bleeding ; the more the bleeding, the less the time

that you can spend in trying the effect of drug treatment.

2. *Removal of tumour.*—If ergot fails, the question comes, Can the tumour be removed? The removal of the tumour is the ideal method, for if this is done the patient is cured without the loss of any function. If the tumour is so small that you can pull it undiminished through the cervical canal, *avulsion* is the way to remove it. Seize the tumour with strong forceps, and then rotate them so as to break away the tumour from the uterus. The safe removal of larger tumours within the uterine cavity depends upon three things. (i.) Great dilatation of the cervical canal. This must be large enough to allow free movement within it of the finger and an instrument. (ii.) Cutting up the tumour into little bits. (iii.) Antiseptics.

There are two conditions which limit the possibility of safely removing through the cervical canal an intrauterine fibroid. (1) The uterus must not be so large that it seems unlikely that, even after the tumour has been removed, or greatly diminished in size, you can get your finger to the top of it. (2) You must be able to distinguish between the tumour and the uterine wall.

The operation is simple, but is tedious and tiring. Seize the nearest part of the tumour with a volsella, and then with scissors cut out as large a piece as you can around the grip of the volsella (Figs. 109, 110). Having removed this, seize another bit, and cut that away, and so on, until you have removed the whole. Or, better, punch out and remove piece after piece with Champneys' punch forceps (Fig. 85).

3. *Abdominal section.*—If the bleeding is impairing the patient's health, if ergot has failed, and the conditions necessary for safe enucleation are not present, an abdominal operation is indicated.

The choice of operation depends upon conditions which cannot be found out until the belly has been opened. One of three things may be done : (1) removal of the uterine body without the ovaries, (2) removal of the uterus with the ovaries and the tubes, (3) myomectomy. I postpone the description of
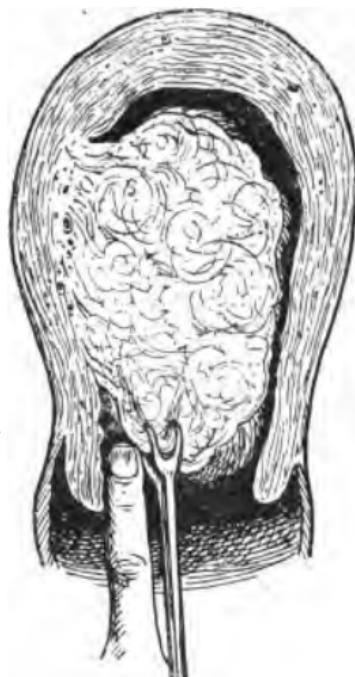
Fig. 109.　　　　　　　　Fig. 110.

Illustrating enucleation of submucous fibroid.

Fig. 109.—Seizure of tumour with volsella guided by finger.

Fig. 110.—Cutting off bit seized by volsella.

these operations until I come to speak of subperitoneal fibroids.

(1) When the cervix is free, remove the body of the uterus and leave the ovaries behind. If this be done, the sexual function is not impaired.

(2) The uterus may be removed with the ovaries

and tubes. It may either be cut off, leaving the cervix
behind, or removed along with the cervix. The terms
in current use are, for the former operation, "hyster-
ectomy"; for the latter, "panhysterectomy." The
correct terms are, for the former, "amputation of
the uterine body"; for the latter, "hysterectomy."
Which of these two operations is the better is a ques-
tion solely for the operator, to be decided on the
operating-table.

4. *Applications to the endometrium.*—The endo-
metrium bleeds, not the tumour. Hence if you
wash out the uterus with a styptic, or scrape
away the endometrium and then destroy by caustic
what has escaped scraping, bleeding is for a time
stopped. The patient may have two or three months'
freedom from excessive hæmorrhage, but when the
endometrium has been reproduced, bleeding returns.
Hence this is only a palliative, not a cure. Advise
it only in exceptional cases, such as when the patient
refuses radical treatment, when circumstances make
her wish to postpone it, or when some accompany-
ing condition contraindicates an operation. I have
checked hæmorrhage by washing out the uterus with
tincture of hamamelis.

PART VI.—LEUCORRHŒA

CHAPTER XXIX

GENERAL CONSIDERATIONS AS TO LEUCORRHŒA

What is leucorrhœa? — Leucorrhœa is the Greek equivalent of the term " whites." It commonly means a discharge from the vulva which is not blood. The vulva is normally moist. A description of the normal secretions will appropriately precede that of the abnormal ones.

The normal secretions which moisten the vulva.—There are four parts from which normal secretions flow on to the vulva : (1) the body of the uterus ; (2) the cervix uteri ; (3) the vagina ; and (4) the vulva itself.

(1) *The secretion of the body of the uterus.*—This is believed to be a clear, watery, colourless fluid. In health there is not much of it.

(2) *The secretion of the cervix uteri.*—The cervix secretes a clear, transparent, glairy fluid like white of egg.

(3) *The secretion of the vagina.*— In healthy virgins this looks like unboiled starch mixed with water. The vaginal secretion is a transudation of albuminous fluid with shedding of the superficial layers of its epithelium. When poured out it is alkaline. But in the lower part of the vagina micro-organisms abound, and they make it acid.

(4) *The secretions of the vulva.*—The vulva contains sebaceous and sweat glands. There is also a sexual gland, Bartholin's gland, the secretion of which is poured out under sexual excitement.

The only definition of a pathological leucorrhœa is that it is that which makes the parts adjacent to the vulva so moist that the moisture is an annoyance to the patient.

It will therefore be convenient to divide the subject into four parts: I. Leucorrhœa in children. II. Leucorrhœa in virgins. III. Leucorrhœa in the married. IV. Leucorrhœa in old women.

LEUCORRHŒA IN CHILDREN

THE chief cause of leucorrhœa in children is *vulvitis*. Put the child on her back, separate the labia, and you will see that the mucous membrane is bright red and bathed in pus. The skin round may be red, with adherent crusts of pus.

Alleged causes.—Among the alleged causes are : (*a*) *Dirt*. (*b*) *Worms*. (*c*) *Struma*. (*d*) "*Constitutional causes*." (*e*) *Chill*. (*f*) *Gonorrhœa*. The gonococcus is the only agent that we know causes purulent vulvitis in children. It is usually conveyed by dirty towels, sponges, clothing, utensils, or fingers ; possibly sometimes by accidental direct contact. (*g*) *Masturbation*. A child with vulvitis may masturbate. But in idiots, who generally masturbate, vulvitis is not common. They get excoriations and sometimes bleeding, but not purulent vulvitis. (*h*) The disease is seen in children in whom the gonococcus is not found : in such we know not its cause.

Treatment.—The treatment is to wash away frequently the discharge and bathe the mucous surface with a saturated solution of borax. If that failed I should use a weak solution of zinc chloride : five grains to the pint. Tell the mother to insert the nozzle of a male syringe in the vagina so that the returning fluid may wash away the discharge and bathe the whole mucous surface. This should be done several times a day.

Vaginitis in children.—The inflammation

may affect the vagina as well as the vulva. In the course of acute infective diseases severe vaginitis sometimes occurs. In children, as in the adult, vaginitis may spread up along the uterus to the Fallopian tubes.

After-effects of infantile salpingitis.—The vulvitis that spreads up to the tubes is of a severe kind. It often leads in the vagina to destruction of the epithelium, or even sloughing of mucous membrane in places, and consequent adhesion and obliteration of the vagina. It leads also to closure of the Fallopian tubes. After these effects have been produced, the inflammation subsides. As the organs are not functionally active, damage to them produces no immediate consequences. The microbes are enclosed within a shut-off cavity. The patient remains well until puberty. Then, when menstruation begins, the blood cannot get out, and hæmatometra is formed. Bleeding also often takes place into the tubes. This blood cannot get out, because the tubes are closed. The microbes in the wall of the tubes find this dead blood a suitable food : they multiply. If, in consequence of injudicious treatment, or some unfortunate accident, the tube bursts and the dead blood escapes into the peritoneal cavity, rapidly fatal peritonitis is the result.

CHAPTER XXXI

LEUCORRHŒA IN VIRGINS

Occasional leucorrhœa. — It is common for young women to get for a few days at a time a little white or yellow discharge—a catarrh of the vagina, like the common catarrh of the nose.

Persistent leucorrhœa.—Some young women have always a chronic catarrh of the vagina. It is a minor malady which is not enough to induce the subject of it to submit to trouble, pain, or risk for its cure. The only reason for examining by the vagina in cases of leucorrhœa is that it may be the first symptom of malignant disease. Now, malignant disease is very rare in young virgins, and if the discharge has been habitual for years it cannot be from this cause. There is, therefore, no need to insist on examining by the vagina a young woman who complains merely of "whites." Prescribe iron if she is anæmic, and an astringent injection, such as zinc chloride ʒj., aq. ℥vj., a tablespoonful to be mixed with a pint of water for use.

Leucorrhœa with pelvic congestion.—In some virgins you will be told not only of constant leucorrhœa, but of profuse menstruation, and of aching in the pelvic region, not removed by lying down, worse before and during menstruation. You find no appreciable morbid change. The only explanation I can give is that there is general congestion of the pelvic organs. It is a chronic condition. In some it has seemed to me to have been brought on

by prolonged standing. In a few, sexual feelings were so often present as to be a trouble to the patient ; similar symptoms are often produced in married women by habitually incomplete sexual intercourse. I conclude that this general congestion of the pelvic organs often depends upon unsatisfied sexual desire. In some cases the leucorrhœa is partly produced by Bartholin's gland.

Treatment.—The result of treatment is in these cases unsatisfactory. If a cause that can be avoided be discovered, its removal is the first thing. The menstrual hæmorrhage may make the patient anæmic. Some people call these cases endometritis, and treat them by dilatation of cervix and curetting. Nothing is found : only very small shreds are scraped off. The leucorrhœa comes from the vagina, perhaps also from the vulva. If the condition is due to, or associated with, strong sexual feeling, marriage will benefit. If consulted on this point, explain this to the patient's mother, or married friend, and let her put it to the patient.

The treatment is (1) rest in bed ; (2) laxatives ; (3) promote sleep and the taking of food.

New growths.—Fibroids, cancer, adenoma, sarcoma occur in virgins as well as in women who are married. They cause other symptoms besides leucorrhœa.

CHAPTER XXXII

LEUCORRHŒA IN MARRIED WOMEN

IN women whose genital organs are functionally active, leucorrhœal discharge may come from either the vagina, or the cervix uteri, or the body of the uterus.

DISCHARGE FROM THE VAGINA

Puerperal vaginitis.—The commonest cause of leucorrhœa is vaginitis, and the commonest kind of vaginitis is puerperal vaginitis. After delivery, involution of the vagina is often deficient. In delivery the vagina is bruised, stretched, and often torn ; and from these injuries result imperfect involution and inflammation of the vagina. The vaginal wall remains larger, thicker, more vascular than the virgin vagina, and its glands secrete more. When you examine women a month or two after delivery, the vagina is injected, red, easily bleeding, and secreting pus. Later, the redness and tendency to bleed diminish ; but the hypersecretion often continues, the women complain of " whites," and the stains upon the linen are yellow.

The cervix also often inflamed.—With puerperal vaginitis there is often erosion and inflammation of the cervix. The prompt effect of vaginal injections in lessening the quantity of the discharge shows that most of it comes from the vagina.

Gonorrhœal vaginitis.—Gonorrhœa is an inflammation produced by a specific micro-organism,

the gonococcus of Neisser ; it runs a definite course. It begins with soreness and smarting in micturition (because the inflammation extends to the urethra), and then purulent discharge. The acute stage only lasts a few days. When it is over, the discharge diminishes, and at the end of five or six weeks gets well. Chronic leucorrhœa may continue long after the acute purulent stage of gonorrhœa is over.

The diagnosis of gonorrhœa.—The clinical evidence by which gonorrhœa is distinguished from other kinds of vaginitis consists in its acuteness, its sudden onset, the thick, yellow, abundant discharge, and the redness and tenderness of the parts. These are only differences in degree from what is seen in vaginitis from other causes. The diagnosis is confirmed by the discovery of the gonococcus.

The gonococcus is a diplococcus : that is, the cocci are arranged in pairs, or in tetrads, that is, double pairs ; they are never in chains. In the early stages they are found free and in the epithelium ; later they are almost all within the pus corpuscles, in the protoplasm, never in the nuclei. They are identified by their size, about one μ in diameter ; their shape, which is round ; their grouping in pairs ; and their uniformity.

The gonococcus is not the only micro-organism present in gonorrhœal pus. The more important complications of gonorrhœa are probably due to other micro-organisms also thriving in the vaginal secretions.

Treatment.—Vaginitis is generally successfully treated by vaginal astringent injections. The most useful is a solution of zinc chloride, from five to ten grains in a pint of water. It is better to begin with a weak solution. Theoretically, its effect will be greater the oftener it is used. But the disease is such a small thing that patients dislike the fuss of

using a vaginal injection several times a day for its cure. When going to bed and getting up is in most cases enough to cure the patient. If there is soreness, begin with a saturated solution of boric acid, or a mixture of half an ounce of the glyc. plumbi acetatis with a pint of water.

There are certain rare forms of vaginitis.

Purulent vaginitis.—I have seen a few cases of very profuse discharge of pus from the vagina. There was no abscess. lt was not gonorrhœal. The pus exceeded in amount anything ever seen in gonorrhœa, and it lasted undiminished for many months instead of tending to recovery as gonorrhœa does. The treatment proper for such cases is, first, mild applications as for ordinary vaginitis ; but if this fail, then apply through a speculum, after cleaning away the pus, strong carbolic acid. Repeat this once a week, and let mild astringents be used in the interval.

Painful vaginitis.—There is a rare kind of vaginitis, the chief symptom of which is pain. The chief occasion of pain is in sexual intercourse. The pain and the dyspareunia vary with the discharge : the patient is more uncomfortable and intercourse more painful and difficult when there is much discharge ; she has less pain when there is less discharge.

The treatment should be of a sedative kind, *e.g.* boric acid or acetate of lead, and with the addition of glycerine pessaries. These, by causing transudation from the vagina, increase discharge, but they lessen congestion. The benefit derived will be greater if the patient stay in bed.

Granular vaginitis is characterised by the occurrence of papules scattered over the whole vagina and on the cervix uteri (Figs. 111, 112). The papules are much like those of measles when at their height. They feel like small shot embedded
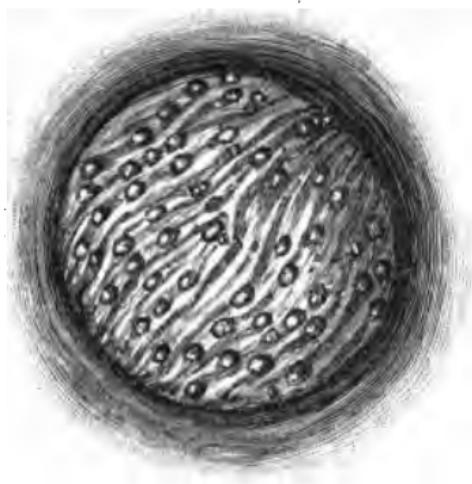
Fig. 111.—Granular vaginitis.

in the mucous membrane. They are deeper red than the surrounding surface. These papules are not inflamed glands; they have been examined and found to contain no cavity. The disease chiefly affects pregnant women, and is often the result of gonorrhœa. It is a chronic disease, has little tendency to spontaneous cure. Its symptom is a copious yellow or greenish discharge. The treatment is, in essentials, the same as that of vaginitis of other kinds. But in this form the discharge is exceptionally copious, and therefore stronger astringents will be needed. Insist strongly upon rest, and prescribe zinc chloride gr. x. ad Oj., or tannic acid ʒij. ad Oj.

Fig. 112.—Granular inflammation of cervix.
(*After Burgess, from a patient, subject of gonorrhœa, but not pregnant.*)

Pustular vaginitis. — I have seen and published * a case in which there were not only papules but pustules, like those of small-pox, in the vagina. The patient was quickly cured by rest in bed combined with a vaginal injection of zinc sulphate ʒj. ad Oj.

Vaginitis with gas cysts; so-called "emphysematous vaginitis." — The characteristic feature of the disease is the presence of these cysts. You feel them, like shot embedded in the vagina. With the speculum they look like greyish black steely vesicles, in size from that of a hemp-seed to that of a pea. Pour water into the speculum and prick one of them—and when pricked they collapse with an audible pop—and you will see a bubble of gas float up. Treat it as I have advised granular or pustular vaginitis should be treated; with the addition that the cysts should be pricked and the gas let out.

Membranous vaginitis. — There are rare cases in which membranous shreds or even casts of the vagina have been passed (Fig. 113). In some cases these have been due to the sloughing of the epithelium from the action of caustics. In others there has been a tendency to inflammation of cutaneous and mucous surfaces ; the exfoliation of pieces from the vagina co-existing with membranous enteritis and eruptions on the skin.†

These membranes are greyish-white in colour. They are smooth on both sides. They are made up of layers of pavement epithelium.

Treatment.—This is (1) to remove any cause that can be found ; to dissuade or prevent the patient from using any injurious application ; (2) to douche

the vagina with a sedative wash, such as a saturated
solution of boric acid, and, if this fail, with mild
astringents. (3) The only drug likely to be of use
given internally is arsenic.

Fig. 113.—**Exfoliation of vaginal mucous membrane.** (*After R.
Barnes, from a specimen*, G G 5, *in the Museum, St. Thomas's
Hospital.*)

DISCHARGE FROM THE CERVIX

How to ascertain source of discharge.
—There are two ways of finding out whether
discharge comes from the vagina or the uterus.
One is by treating the vagina or the cervix uteri, as
the case may be. If the discharge comes from the
cervix, treatment of the vagina alone will not stop

it ; and if it comes from the uterine body, treatment neither of the cervix nor of the vagina will check it. The other is, by finding disease of the cervix or body of the uterus such as causes discharge.

Production of cervical lacerations.—In most labours the enlargement of the os is finished, not by stretching, but by tearing. The tears, whether produced by unaided nature or with forceps, are generally lateral. Tears, great or small, are so frequent that their presence is a valuable presumptive evidence of childbearing.

Should tears of the cervix be sewn up at once?—The suture of lacerations of the cervix immediately after delivery is only desirable when required to stop bleeding.

The results of cervical lacerations.— (1) Each tear of the cervix is an open wound. If during lying-in the genital organs are kept clean, the wounds heal, and a fibrous scar is formed.

(2) When the patient gets up, the intra-abdominal pressure drives the cervix uteri against the posterior vaginal wall, forces the lips of the cervix asunder, and eversion of the lower part of the cervical canal is the result. By this eversion mucous membrane is exposed to friction and pressure.

(3) The effects of such friction and pressure are not the same in every case. In some the columnar epithelium becomes changed into squamous. There is no inflammation. There are no symptoms.

Indirect results of injury to the cervix. —In other cases, and especially in those in which there is subinvolution, the friction and pressure produce and keep up chronic inflammation of the cervix. Its lips become not only everted but swollen ; instead of their profile on section being conical (as in Fig. 114), it becomes club-shaped (as in Fig. 115). Its surface often becomes the seat

of the flat, adenomatous growth, known as "erosion."
When the cervix has been long inflamed the enlarge-
ment and induration of the cervix become perman-
ent. This is sometimes spoken of as hypertrophy,
or hypertrophic swelling of the cervix.

Historical interest of cervical erosions.
—The commonest disease of the cervix uteri is the
granular erosion. This is of historical interest, be-
cause it was the first minor uterine disease which was
treated locally. It is a red, granular, raised surface
round the os uteri externum.

Fig. 114.—Profile of split   Fig. 115.—Profile of cervix,
cervix, not inflamed.   split and inflamed.

Microscopic anatomy.—The layers of pave-
ment epithelium which normally cover the vaginal
portion are replaced by one layer of columnar
epithelium. There is a new formation of gland
tissue ; recesses and follicles lined with columnar
epithelium. It is a flat, adenomatous growth.

Varieties of erosions.—When the follicles
are deep and ₍many, the tissue between them
resembles papillæ or villi. This condition is seen
chiefly in pregnancy, and has been called a *papillary*
erosion. When follicles are deep, their openings
may get stopped up, and secretion be retained. Pave-
ment epithelium may be re-formed over such a fol-
licle. ₍Erosions with such blocked-up follicles have
been called *follicular* erosions. Blocked and dilated
follicles may hang down from the cervical canal, and
have been called ovula Nabothi.

K

Etiology of cervical erosions.—We know little about the causes of adenomatous growths on the cervix. Erosions occur in the virgin, the nullipara, and the parous. They are more frequent in the parous.

Inflammation of cervix.—With " erosion " there is generally inflammation of the cervix. The vaginal portion is swollen, so that, instead of being conical, it is club-shaped. Its canal is widened. The secretion from it is muco-purulent.

Symptoms of erosion and inflammation of the cervix.—I doubt whether erosion of the cervix without inflammation causes any symptoms. When the cervix is eroded and inflamed, there is reflected pain over the part of the skin supplied with sensory nerves from the eleventh dorsal segment of the spinal cord. Nuchal pain is common. There is usually discharge, either glairy or purulent ; the quantity and character depending on the amount of vaginitis associated with the cervical disease. There is no constant effect of cervical inflammation upon menstruation.

Treatment.—The treatment of erosion and inflammation of the cervix is simple and successful. It consists in cleanliness, mild astringent douches, and the repeated destruction of the abnormal epithelium by mild caustics. Prescribe a vaginal douche as for vaginitis. Cauterise the cervix every five or six days. This is best done through a Fergusson's speculum. With wool held by the speculum forceps clean away the discharge. If the os externum be narrow, clean the cervical canal with a Playfair's probe having wool wrapped round it. Then apply the caustic. The best is carbolic acid, with one-seventh part of water added to liquefy it. Apply this first to the vaginal portion with wool held by the speculum forceps, and then to the cervical

canal with Playfair's probe. Take care to mop up all the caustic, so that none may go on the vulva, for its application to the vulva will make the patient sore. Under this treatment the columnar epithelium will become changed into pavement. About six weeks' treatment is usually enough. See that the patient sleeps well, eats well, and leads a healthy life.

Surgical treatment of erosion and inflammation of the cervix.—There are two operations by which an erosion of the cervix can be cured : 1, Emmet's ; 2, amputation.

1. **Emmet's operation.**—Seize the cervix with a volsella and pull it down to the vulva. If the uterus is so fixed that it cannot be pulled down, do not perform the operation.

Press the lips together with a volsella, so as to see where they should come into apposition. Holding them in apposition, by a superficial incision mark out the outer boundary of the surface that should be denuded. This surface should include the angle of the rent. This done, hold the lips well apart, and pare the edges of the rent either with scalpel, tenotomy knife, or scissors. Sufficient tissue should be left untouched between the two raw surfaces to make a cervical canal. Make the raw surfaces as large as possible consistently with the maintenance of a cervical canal, and see that the planes of the raw surfaces on each side can easily be brought into apposition. Take care that no mucous membrane is left in the angle of the rent (Fig. 116). The freshening of the edges is more easily done when the lips are held well apart ; therefore, unless there be much hæmorrhage, pare the edges on both sides before putting in the stitches, and put in all the stitches before tying any of them. The best suture material is either silver wire or silkworm gut. Aveling's coil and shot is the best mode of securing them.

If the rent extends high up, paring may cause free bleeding. Hæmorrhage will be checked by fastening the stitches. If there be much bleeding the stitches should be at once inserted and secured, without stopping to pare the opposite side or insert
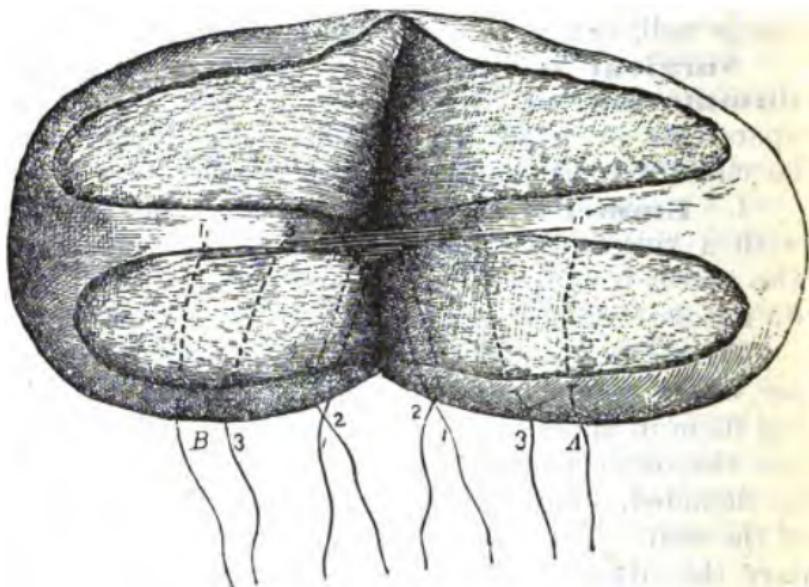
Fig. 116.—Emmet's operation : the sides of the rents pared.
(*After Emmet.*)

The numbers indicate the ends of the higher sutures. The lowest thread is marked *A a*, *B b*.

all the stitches. The stitches should be removed at the end of a week, and the patient allowed to get up.

Results of Emmet's operation.—When erosion and inflammation occur with deep tears and eversion of the cervix, it in a few cases relapses time after time, after cure by the ordinary means. Such a case can be permanently cured by Emmet's operation.

Emmet's operation as a preventive of abortion.— Sometimes patients with deep lacerations of the cervix

repeatedly miscarry. By repairing such lacerations you
may enable the patient to carry a child to the full term.

Hypertrophic swelling of the cervix. — Hyper-
plasia, or hypertrophy of the cervix, is marked
by thickening, so that its circumference at the
vaginal insertion is enlarged, and below the vaginal
insertion it is swollen out, club-shaped, and, if
fissured, the parts separated by the fissures diverge.
It is of natural colour, and smooth everywhere. It
is little, if at all, increased in length, thus differing
from the kinds of hypertrophy described in Chapters
X. and XII. On microscopic examination such a
cervix is covered with pavement epithelium, and only
differs from a healthy cervix in that besides being
larger it is harder, and contains more fibrous tissue.
It is therefore sometimes called "areolar hyper-
plasia." The cervix may around the cervical canal
be covered with a granular erosion.

Etiology of hyperplasia of cervix.—Such hyper-
trophy may be a result of subinvolution. If nothing
but this be present, there will be no erosion and no
symptoms. But hyperplasia of the cervix is usually
met with associated with chronic metritis.

Blocked-up glands in the vaginal portion.—It often
happens that the orifices of glands become blocked
up. These cysts feel like shot embedded in the
cervix. The retained secretion may be clear, and
then the little cyst will look like a spot a trifle paler
than the rest of the mucous membrane. It may be
purulent, and then the spot will be yellow. The
pus may be inspissated. The cysts are cured by
pricking them and letting out the retained secretion.
They are usually about the size of a hempseed.

2. **Amputation of cervix.**—If the cervix
is so thickened that Emmet's operation cannot be
done, amputation of the vaginal portion is the better
surgical proceeding.

Mucous polypi grow from the mucous membrane. They consist of an overgrowth of glands, with connective tissue between them. They are lined with a single layer of columnar epithelium. The connective tissue between them is looser than that of the cervix. The external surface of the polypus is sometimes covered with columnar epithelium, sometimes with squamous epithelium. Sometimes a mass is formed having a stalk, and made of glandular follicles, with tissue like that of the normal cervix between them. Such a condition is known as *follicular hypertrophy of the cervix.*

The common mucous polypus is a red tumour, in size from that of a pea to that of a cherry, hanging by a stalk out of the os externum. Generally such tumours are round, but they sometimes look like a small cock's-comb. These polypi are crushed when seized with forceps. Follicular hypertrophy of the cervix forms a tumour which is pear-shaped, and firmer than the common form.

Symptoms of mucous polypi. — These growths are generally associated with inflammation of the cervix. They cause leucorrhœa. The menstrual flow is somewhat increased. The polypus may bleed when touched, and then sexual intercourse will be followed by hæmorrhage.

Treatment.—The treatment is simple. It is to take hold of the polypus with forceps and twist it off.

DISCHARGE FROM THE UTERINE BODY

In most cases in which there is discharge from the uterine body there is also discharge from the vagina and cervix. Endometritis is generally a slight and transitory thing, the only importance of which is that it may extend to the Fallopian tubes. It produces no symptoms except a slight change in the colour of the discharge already present.

Morbid anatomy.—When inflamed the lining of the uterus secretes pus ; on section the tissue is seen to be infiltrated with leucocytes. The causes of this disease are :

(1) **Puerperal infection.**—If a bit of membrane or placenta remain in the uterus and decompose, the endometrium becomes inflamed. The lochia are in excess ; the flow remains longer. There may be slight fever, and the lochia may stink ; these symptoms usually go together. The involution of the uterus is retarded.

Course of puerperal endometritis.—(a) It may be cured by removal of the retained stuff. (b) It may be spontaneously cured by expulsion of the retained stuff. (c) Discharge may linger on for months. (d) Chronic salpingo-oöphoritis may be the result.

Symptoms of chronic catarrhal endometritis.— These are slight. White or yellow discharge. Pruritus if the discharge is irritating. Menstruation may be increased in quantity, but is not always. If discharge continues after a cervical erosion has been cured, and notwithstanding the use of vaginal astringent injections, you may infer that the discharge comes from the body of the uterus.

(2) **Gonorrhœa** may cause endometritis. The inflammation may spread from the body of the uterus to the Fallopian tubes, and thence to the peritoneum. There are no symptoms by which the extension of the disease can be detected until the peritoneum is reached. If the peritoneum suffers, it is usually within two months of the date of infection. Gonorrhœal inflammation of the vagina may get well without treatment, and so may gonorrhœal endometritis.

(3) **New growths.**—A *dead fibroid* may set up purulent endometritis. *Cancer,* or other rarer tumours, such as *sarcomata* or *adenomata,* may also

do it. This endometritis is secondary in importance to the condition which caused it.

(4) **Banal causes.**—There are alleged causes of endometritis accepted and copied from book to book without inquiry. Among these causes are (*a*) suppression of menses, (*b*) retroflexion, (*c*) anteflexion, (*d*) congenital stenosis, (*e*) overloading of the bowel, (*f*) over-exertion during menstruation, and (*g*) excessive sexual activity.

(5) **Endometritis in febrile diseases.**— In certain febrile diseases hæmorrhagic endometritis has been described. Such endometritis is at the time subordinate in importance to the constitutional disease which produces it.

Symptoms of endometritis.—The symptoms of endometritis are slight. The diagnosis is made by the physical signs. The cervical canal is dilated. Round the os externum the mucous membrane is red and has lost its smooth and shiny appearance. There is a rusty, bloody or purulent discharge issuing from the canal. Passage of a sound causes bleeding.

Treatment of acute endometritis.—The one serious consequence of endometritis is the extension to the peritoneum ; if this be averted, the disease is a trifle. Keep the patient at rest ; this is most effectively attained by ordering her to bed. Keep the vagina clean by antiseptic and sedative or astringent douches : a saturated solution of boric acid if the vagina be sore or the discharge irritating ; chloride of zinc, $\frac{1}{4}$, $\frac{3}{8}$, or $\frac{1}{2}$ a grain to the ounce, if the discharge be copious. This will prevent the addition of fresh germs to those with which the leucocytes are already battling. Under such treatment most cases will get well in a week or two.

The name " endometritis " has been applied to adenomatous growths. I have described this form of " endometritis " in Chapter XXV.

CHAPTER XXXIII

LEUCORRHŒA IN OLD WOMEN

A VAGINAL discharge in a woman whose genital organs have atrophied is generally copious and always morbid. It may come from the vagina, or from the uterus, or from both. Its source can sometimes be found out with the speculum, sometimes only by the effect of treatment.

Physical signs.—With the speculum you see that the vagina is smooth, injected, sometimes bleeding, and covered with pus. If the discharge is only vaginal the cervix will be healthy. If the discharge be from the uterus, you may see fresh pus run out of the os after you have cleaned it. If examination leaves you in doubt whether the discharge is vaginal or uterine, the effect of treatment will inform you. Astringent applications to the vagina will have no effect upon a discharge which comes from the uterus.

Causes of senile vaginitis.—Vaginitis in an old woman may be due to *gonorrhœa*. The presence of a *pessary* may cause vaginitis. With *esthiomène*, vaginitis is often present.

Bleeding vaginitis.—Hicks[*] has described a case—that of an old woman—in which the discharge was blood ; the vagina was covered with granulations.

Treatment of vaginitis in old women.—The treatment of vaginitis is the same in old as in young women ; but the disease is harder to cure and relapse is commoner. If intractable, use strong

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[*] *Lancet*, 1885, vol. i., p. 610.

applications such as those advised for purulent vaginitis (page 284).

Uterine leucorrhœa.—The discharge may be uterine. After you have mopped away the discharge lying about the cervix you can see fresh discharge flow down. The treatment by applications to the vagina has failed to alter it. Examine the uterus bimanually. If it be enlarged, there is probably a new growth within it. These are described in Chapters XXVII. and XXVIII. If the uterus is not enlarged, the disease is probably *senile endometritis*.

Senile endometritis. — This is so rare a disease that I know no good account of its morbid anatomy. The symptoms are purulent discharge, often mixed with blood ; pain, which may keep the patient awake at night ; and sometimes wasting. Pain and wasting may be slight or absent. The disease begins after the menopause. It occurs in the virgin, the nulliparous, and the parous. It has little or no tendency to spontaneous cure.

The disease is hard to distinguish from cancer in an early stage, and it sometimes runs the same clinical course as cancer. Therefore, if milder treatment does not quickly produce decided benefit, the uterus should be removed.

Treatment of senile endometritis.—First treat the vagina. Swab it out with strong carbolic acid (take care that none goes on the vulva). Prescribe frequent astringent injections such as zinc chloride, 5 to 10 gr. to the pint. Begin with the weaker, and increase the strength if necessary. Repeat the carbolic application two or three times, if necessary, at weekly intervals. If treatment of the vagina does not abolish the discharge, the cervix should be dilated with laminaria tents and the interior of the uterus explored. If growths are felt, they should be scraped away. If there are no out-

growths, the endometrium should be scraped with a blunt curette, any bits detached examined with the microscope, and then the interior of the uterus swabbed with strong carbolic acid or lin. iodi. This will remove the symptoms for a time. If they return, remove the uterus.

DISORDERS OF THE VULVA

CHAPTER XXXIV

PRURITUS VULVÆ

PRURITUS, that is, itching of the vulva, is in many women only occasional, the worst time being the few days following menstruation. In a few bad cases it is persistent, causes an almost irresistible impulse to rub and scratch the part, and causes both local suffering and, by preventing sleep, injury to health.

Local changes. — In chronic pruritus the mucous membrane is sometimes thickened, according to the amount of rubbing and scratching. Microscopically there are signs of chronic inflammation, exudation of leucocytes, and organisation of fibrous tissue. There is fibrosis of the nerves and the nerve-endings.

The causes of pruritus fall into five classes :

1. **Adventitious causes.**—(a) *Pediculi :* You will see the insects and their eggs clinging to the roots of the hair. Prescribe ung. hyd. amm. chlor. to be rubbed for three nights into the skin on which hair grows ; by one application eggs may remain unaffected. The *Acarus scabiei* may cause itching, but this is not limited to the vulva. (b) *Dirt :* Some women, who are scrupulously clean in other respects,

do not carefully wash the vulva; and if this is not done, secretion may accumulate and cause itching. The treatment is to explain to the patient the necessity of washing the internal folds of the vulva as well as the outside skin.   (c) *Worms* are said to be causes of pruritus vulvæ. I have never seen a case so caused. The treatment is to kill the worms.   (d) *Pessaries:* Sometimes the vaginal secretions form with the material of a pessary an irritating compound.   This may happen with pewter and with indiarubber instruments.   The treatment is to remove the pessary or substitute one of a different material.

2. Inflammation of the skin or mucous membrane.—Any inflammation about the vulva, when not enough to produce soreness, may cause itching.

Diabetes and pruritus.—In any case of severe pruritus, examine the urine for sugar.   In women after the climacteric, glycosuria is a frequent cause of pruritus.   Glycosuria brings with it a tendency to inflammation of the skin, and the itching of the vulva is produced by this inflammation.   In the majority of cases it is a dry papular inflammation. It may be a moist eczema with much discharge, or there may be a boil or boils on the labia.   This tendency occurs early in diabetes; itching of the vulva not uncommonly leads to the discovery that there is sugar in the urine.

Treatment.—The treatment here consists of two parts—(a) the general treatment of glycosuria by diet, drugs, etc., for full information upon which consult works on general medicine; (b) the local treatment, which consists in great cleanliness and applications such as those I shall elsewhere advise for eczema not of diabetic origin.

3. Irritating discharges. — Any discharge which keeps the vulva moister than usual may cause

itching. Therefore, always inquire about discharge and notice the condition of the cervix and vagina. If there is an abnormal discharge, you must correct this to cure the itching. The treatment of the discharges I have described in Part VI.

In some of the worst cases of pruritus you will see nothing wrong with the skin or mucous membrane of the vulva. The patient has little or no discharge. With this apparently healthy condition of the part there may be continual itching, making the patient miserable; and this may occur in the virgin. I suspect the cause of the itching in these cases to be a microbe which decomposes the vaginal secretions and makes them irritating.

Treatment.—The treatment of these cases consists of sedative and antiseptic washes to the vagina, followed by sedative powders to the vulva. Tell the patient to douche the vagina with a saturated solution of borax or a lotion made by adding glyc. plumbi acet. ʒj. to a pint of water, and after this to hold the labia apart and puff on a powder to the mucous membrane with an insufflator (Fig. 117). The best is "dermatol" (a trade name given to a gallate of bismuth). These applications will give relief; but the relief given may last for so short a time that complete relief can only be got by repeating the application oftener than is convenient. If so, swab the vagina and cervix with strong carbolic acid, seven parts to one of water. This may cure, or

Fig. 117.—Insufflator.

it may have to be repeated. Take care that none of the acid goes on the vulva, for if it does it will produce long-continued smarting.

4. **Venous congestion.**—Itching is especially frequent when there is venous congestion of the pelvic organs, in pregnancy, and in corpulent people with varicose veins, just as pruritus ani is common with piles. The treatment consists, as in other kinds of pruritus, of cleanliness and sedative applications.

5. **Nervous.**—Itching of the vulva in aged women is sometimes a symptom of degenerative changes in the nervous system. Treatment, if the itching be from this cause, will fail. Therefore, look for some other cause, and if in doubt use remedies (such as those mentioned above) which may relieve and will not harm.

Treatment of pruritus by excision.— Pruritus has been treated with success by excision of the skin and mucous membrane which are the seat of the itching. The cases suitable for it are those in which other treatment has failed, and the itching is limited to a tract of diseased integument which can be taken away.

CHAPTER XXXV

INFLAMMATIONS AND ULCERATIONS OF THE VULVA

THE diseases which I describe in this chapter have as their main symptom soreness of the vulva.

Inflammation of sebaceous follicles.—This is a pathological process alleid to the acne which occurs on the face. In the beginning it is a distension of the gland. When a sebaceous follicle is distended, the retained secretion after a time provokes inflammation, and the follicle suppurates. When the follicle is emptied, the inflammation subsides. These inflamed follicles are seen chiefly on the hairy parts ; they are not numerous. There is no accompanying dermatitis. The irritation they cause is only slight. The treatment is to squeeze out the contents of the distended follicles, and wash the vulva thoroughly with a germicide soap.

Herpes zoster of the labium.—This is rare. It is distinguished by its acute origin, its unilateral character, rapid recovery, and freedom from relapse. It consists in a crop of vesicles on one side only, preceded by pain, and accompanied by congestion of the surrounding skin. The vesicles become pustules, which break and dry up into scabs. The inflammation then subsides, the disease gets well and never relapses. Herpes zoster runs its course, and gets well within a fortnight. All that you can do is to diminish the effect of the inflammation around.

Dermatitis, or "eczema" of the vulva.—
The different morbid changes which inflammation of
the skin may present cannot, as a rule, be demon-
strated on the skin of the vulva as they can on that of
more exposed parts. This is because (1) the skin of
the vulva is moistened by secretions, is covered with
hair, and is liable to friction ; and (2) the disease is
seldom seen in the beginning. Hence all that is seen
in most cases of this disease is that the labia are
swollen, red, moist, and excoriated. At the peri-
phery of the disease a few vesicles or pustules may be
detected. The inflammation often extends beyond
the vulva. When the mucous membrane is affected,
it becomes white, thick, swollen, something like the
skin of a washerwoman's hands, and looks drier
than normal ; when spread out, red sulci are seen
marking its folds. This condition is sometimes
ascribed to friction. There has generally been fric-
tion, but friction alone does not produce such an
appearance.

Etiology.—This disease usually affects fat,
elderly women, and those who are pregnant. The
disease is made worse by scratching ; by long stand-
ing or walking, and the use of alcohol ; and by the
drinking of much fluid. Eczema of the vulva often
begins suddenly. If properly treated, it will get well
in two or three weeks ; if neglected, it may go on
for months or years, and the more chronic it becomes
the more difficult it is to cure.

Relation to diabetes.—Dermatitis of the
vulva is especially frequent in the diabetic. The
way to cure it is to treat the diabetes.

Diagnosis.—This is easy. The symmetrical
redness, swelling, and moisture of the labia are seen
when the parts are inspected. Separate the labia
and see that there is no circumscribed growth or
ulceration. Then test the urine for sugar.

Treatment.—Put the patient under favourable conditions. Therefore keep her recumbent, forbid alcohol, tell her to drink no more fluid than is needful to allay thirst, and not to scratch.

The secretion of the morbid surface is locally irritating and contagious. Direct the patient to take a hip-bath, night and morning, of water at a temperature of about 98° to which Wright's liquor carbonis detergens has been added in the proportion of a tablespoonful to each gallon of water, remaining in the bath long enough, and so bathing the part while in it, that all scab may be detached. After the bath, let her dry the inflamed part by puffing powdered boric acid on to it with an insufflator. If there be discharge from the vagina, this must be checked by douches. Order glyc. plumbi acetatis, half an ounce to be mixed with each pint of water. Give mag. sulph. ʒj., mag. carb. gr. x., three times a day. Add liq. Fowleri ♏ij. to each dose.

Speedy cure is only effected when the disease is recent. When local irritation makes life intolerable and remedies fail to give relief, more radical measures are justified. Such cases have been cured by cutting away the diseased skin and mucous membrane. The thick, tender, vascular labia are thus replaced by a fibrous cicatrix, and if the patient be old such an operation entails no functional disability.

Follicular vulvitis.—Follicular vulvitis (Fig. 118) consists in deep red spots, of about the size of a pin's head, scattered on the vestibule and inner surface of the nymphæ. Treat such a case by puffing a powder, such as dermatol, iodoform, zinc oxide, or thiol, on to the affected part; together with the treatment proper for gonorrhœa, if present.

Chancres.—The Hunterian or indurated chancre.—This chancre is not inoculable on the same individual. Hence, when lateral, it is on one

side only. When on the labium, it often causes œdema : hence œdema of one labium only should suggest chancre. The common seat of chancre is at the vaginal orifice. The conformation of the vulva is such that induration around chancres in women
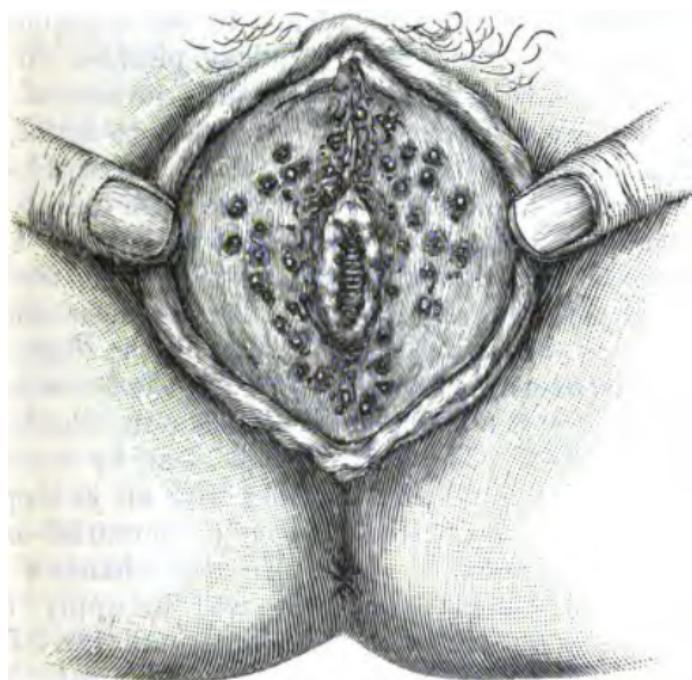
Fig. 118.—Follicular vulvitis affecting mucous membrane. (*From a drawing by Burgess of a patient of the author's.*)

cannot easily be perceived. At the vaginal orifice a chancre looks like a little fissure with a coppery-red border. When on the labium, it looks at first like a pimple. In this situation, induration is distinct. It may seem not to discharge. If in doubt, feel for the bullet-bubo in the groin corresponding to the chancre. If the chancre be median, the glands in both groins will be enlarged.

Chancre may occur on the cervix uteri. I have

seen and published one case.* Such a sore has not the uniform red granular appearance of an erosion, but is more mottled, and it has a broad zone of congestion round it which is not present with an erosion.

Soft chancres.—Soft chancres, being inoculable, are often symmetrical, a chancre inoculating itself on the opposite side of the vulva. In the beginning a soft chancre looks like an ordinary pimple. When developed, it is a round sore with a surface of the colour of wash-leather and a red areola round it. If situated on an exposed part, where the discharge can dry, the chancre may be covered with a scab. If the inguinal glands are affected, it is not the hard bullet-bubo of syphilis, but enlargement with tenderness and perhaps suppuration. The diagnosis can be settled by inoculating the discharge on the thigh.

Treatment of chancres.—The local treatment of hard and soft chancres alike consists in cleanliness and antiseptics. The part is kept clean by washing out the vagina night and morning with an antiseptic injection. The best antiseptic is a mercurial one : corrosive sublimate 1–2,000. To heal chancres the remedy is iodoform. The best way to apply this is to puff it on the sore with an insufflator. If a hard chancre is present, mercury is essential. The patient may have been inoculated with both viruses, that of the soft and that of the hard chancre ; therefore in any kind of chancre give mercury. If the chancre heals without bullet-bubo or secondary rash, leave off the mercury. Prescribe a pill of hyd. c. cretâ gr. j., pulv. ipec. co. gr. j. (commonly known as Hutchinson's), twice a day.

Syphilitic condylomata. — These patches form flat or slightly convex broad-based discs. They often a little overhang the base. They are not pointed, like non-venereal warts. On the mucous

* *Obst. Trans.*, vol. **xxvii.**

membrane they form reddish or greyish-white patches, either disc-shaped, or of sinuous outline formed by the coalescence of discs.   They cause discharge which is often offensive.   Condylomata are among the earliest secondary symptoms of syphilis.   They begin to appear about two months after contagion.   When in doubt as to the diagnosis of such patches, look for the bullet-bubo in the groin, for a rash on the skin, and for ulceration of the tonsils.

Treatment.—(1) Keep the parts dry and clean, and apply mercury.   Let the patient use a vaginal injection, night and morning, of corrosive sublimate, 1–2,000.   After doing this, let her puff from an insufflator over the mucous patches a powder composed of equal parts of oxide of zinc and calomel.   (2) Give mercury.

Furuncle.—An ordinary boil occasionally forms on the labium, but it differs not from a boil occurring elsewhere.   The only local treatment required is to keep the part clean.

Lupus of the vulva, or esthiomène.— These are names given to a disease peculiar to women, which consists in chronic ulceration with fibrous overgrowths.   The name " lupus " was applied to it because it was thought identical with common lupus, such as is seen in the face and elsewhere, it being supposed that the disease, when affecting the vulva, was so modified by the local conditions of warmth and moisture as to present peculiar characters.   This view of its pathology was adopted by Matthews Duncan, but it is not universally accepted; Mr. Hutchinson thinks it a remote form of syphilis, due partly to syphilis, partly to local irritation.   Whatever the pathology of the disease, it is a morbid condition which is peculiar to women, and has definite characters.   I prefer the name " *esthiomène* " (ἐσθιόμενος, eating), given to the disease by the

Fig. 119.—"Lupus" of the vulva, or esthiomène.
(*After Matthews Duncan.*)

French observers who first described it.* The best
description of the disease has been given by Matthews
Duncan.† (Fig. 119.)

* *See* Huguier, *Mém. de l'Acad. Nationale de Médecine,*
vol. xiv., 1849. † *Obst. Trans.*, vol. xxvii.

Ulceration.—Ulceration is present at some time in all cases. Ulceration may be present at one place, and overgrowth at another; or the hypertrophied parts may be ulcerated. The ulceration most often affects the vulva, the labia, clitoris, vestibule, and urethral orifice; but it may spread to the mons veneris, thighs, perineum, anus, and rectum. There may be one ulcer, or more than one. The surface of the ulcer is pale. It may be granulating or smooth. Its margins may be thick and fibrous or overhanging, and its base indurated or not, according to the degree of hypertrophy. It secretes pus. Such ulcers have been known to bleed profusely. The ulcers are not tender. The ulceration may extend down into the subcutaneous tissue, forming a pit; it may undermine skin, or it may perforate a labium or the recto-vaginal septum. It attacks skin, mucous membrane, and subcutaneous soft tissues, but never bone, which latter fact is one of the reasons for doubting the syphilitic nature of the disease. The ulceration spreads slowly, not by sloughing, and in time it heals. It may spread in one direction while it is healing in another. Its healing is the feature which distinguishes this disease from cancer. The ulceration of esthiomène may attack the urethra and widen it. I have seen it so enlarged as to admit the thumb. In cicatrisation it may cause stricture of the urethra, and lead to retention of urine; this I have seen.

The overgrowths.—In esthiomène there is always more or less overgrowth. There may be much ulceration and little overgrowth, or much overgrowth and little ulceration. The overgrowths affect the same parts as the ulceration—labia, clitoris, hymen, fourchette, urethra, anus, rectum. They consist in fibrous induration of the skin or mucous membrane and the subcutaneous tissue. It is not symmetrical,

although on both sides. The overgrowth may be a general fibrous thickening of the part affected, so that, though enlarged, it (*i.e.* a labium or the clitoris) preserves its natural shape ; or it may consist in round fibrous nodules or groups of nodules. The overgrowths are sometimes of a dead white colour, sometimes brown, sometimes bluish ; if inflamed, they may be deep red. Unless inflamed, the overgrowths are not tender.

With esthiomène there often goes vaginitis, with purulent discharge ; less frequently there are urethritis and cystitis.

Strictures from esthiomène. — The overgrowths may lead to contraction of the vagina or urethra, *i.e.* stricture. There is a stricture of the rectum well known to surgeons—the simple or tubular stricture. It is known that in most cases there is no evidence of syphilis, and that the disease is almost confined to women. It is produced by an overgrowth of fibrous tissue in the lower part of the rectum, making the wall of the rectum rigid and its lumen narrow. I take this stricture to be the same disease—one peculiar to women—which when it affects the vulva is called esthiomène.

Differences from elephantiasis.—Esthiomène is not the same thing as elephantiasis. Elephantiasis is due to blocking of the lymphatics by the *Filaria sanguinis hominis*. In elephantiasis there is solid fibrous enlargement ; there is no ulceration except that accidentally due to friction or pressure ; and the enlargement is of the whole part, not of isolated lumps and nodules. Nor is esthiomène simply the œdematous swelling which results from dermatitis and scratching. This latter is symmetrical, and goes away when the dermatitis is cured.

Prognosis.—Esthiomène is very slow in progress. The ulcerations sometimes heal without treat-

ment ; but the presence of the overgrowths seems, as a rule, to keep up the ulcerative process.

Treatment.—Much improvement can always be effected. The first thing in treatment is to remove the overgrowths. This is best done by cutting through their bases with Paquelin's cautery. If healthy tissue is cut through, the wounds heal well. Their healing, and that of the ulcerations, is favoured by cleanliness and the use of alterative applications such as those mentioned elsewhere.

Cancer of the labium.—The proportionate frequency of cancer of the vulva to cancer of the uterus is not more than one to thirty or forty. Cancer of the vulva begins either in the clitoris or the labium. Cancer of the labium occurs generally in those advanced in years. It begins as a small hard pimple, usually on the inner and lower part of the labium. From a pimple it becomes a hard raised nodule. Then it begins to break down, and it causes a little smarting pain and itching. The latter is often the first symptom. When ulceration has begun, there is discharge and more pain. If seen at this time, there is an ulcer with a hard border excavated internally and swollen externally, and a hard, uneven surface. If the ulcer is large, its surface does not exhibit the uniform colour of a healthy granulating sore, but presents here dark spots from small ecchymoses, and there greyish or whitish spots of sloughy tissue ; and the discharge is brownish or greyish, and offensive from its containing bits of decomposing tissue. As the cancer advances, it spreads usually more rapidly along the mucous surface than outwards over the skin of the labium. It rarely affects the opposite side. The glands are not usually implicated until the disease on the labium has advanced far enough for easy diagnosis.

Duration.—We do not know how long it may

last before ulceration. Death usually takes place within two years from the occurrence of ulceration. It results from exhaustion, aided by hæmorrhage.

Diagnosis.—The diagnosis of advanced cancer of the labium is easy. The induration around the ulcer, its excavated edge, the signs of breaking down on its surface, and the enlargement of the glands leave no doubt as to the nature of the disease.

In its beginning cancer might be taken for a *chancre*, or *vice versâ*. A *soft* chancre can hardly be taken for cancer. If there be doubt, inoculation of the discharge will produce a similar sore. But a Hunterian chancre, like epithelioma, may begin as a small hard pimple. The chancre is generally seen in young women, epithelioma in the old. If a chancre, you will feel the bullet-bubo in the groin ; while in early cancer there will be no glandular affection. Mercury will make the chancre heal, but will have no effect on cancer.

Doubt may arise whether ulceration in the labium is cancer or esthiomène. This latter disease presents ulceration with fibrous overgrowths. But the growth is not a zone of hardening round the ulcer and nowhere else. It consists of masses of hard, pale-bluish or pink fibrous tissue, it may be near the ulcer, but it may be also at other parts of the vulva or in the rectum. Its colour is the healthy red of a granulating wound, not mottled with bits of sloughy tissue and dark spots from the giving way of small vessels. If the fibrous overgrowths are cut away, and the ulceration treated with antisyphilitic remedies, such as mercury and iodoform, the ulceration will heal.

Treatment.—The only treatment of labial cancer is its removal, with a broad zone of healthy tissue round it, and with the lymphatic glands in the corresponding groin. There are two ways of doing

this : (a) the knife, (b) the Paquelin cautery-knife. (a) If the knife be used, first destroy the surface of the growth with the actual cautery, lest a cancer fragment should get implanted on the wound surface. In cutting, aim at getting a large margin of healthy tissue away with the growth. The tissue of the labium is loose and vascular, and, as a large gap in it is left, the conditions are not favourable to union by first intention, however carefully the wound be stitched. (b) The Paquelin cautery, which prevents inoculation by charring the whole wound surface, is a quicker and simpler way of getting away the cancer with precaution against inoculation.

Remove the glands in the groin. Although relapse may take place, yet the patient will get a period of freedom from symptoms, and her life will be lengthened.

Cancer of the clitoris.—As the clitoris is highly sensitive and exposed to contact, the disease generally attracts attention early. It presents itself as a bright red, hard warty growth, with edges overhanging its base, looking something like a strawberry. Cancer of the clitoris is usually found out soon enough for easy removal. The best way of removing it is to cut it away with the knife, taking away also a large margin of healthy tissue. The inguinal glands on both sides should also be extirpated.

Melanotic sarcoma.*—Almost all melanotic tumours occur on parts which are naturally pigmented. Melanotic sarcoma affects the vulva oftener than the higher parts of the genital tract. Of melanotic tumours, only about 4 per cent. occur on the vulva. The labia majora, perineum, and mons

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* *See* Haeckel, *Arch. für Gyn.*, Bd. xxxii., for a case, and an account of the literature of the subject ; and Lewers, *Obst. Trans.*, vol. xxviii., for a case ; also Kalmlow, *Arch. für Gyn.*, Bd. xl.

veneris are the parts of the vulva most affected. Most cases are in old women. The disease is rare.

The tumour is a bluish-black, reddish-black, or greenish-black circumscribed firm swelling. It grows quickly, and soon travels along the lymphatics (which may sometimes be felt and seen as black cords) to the nearest lymphatic glands ; which, when the vulva is affected, are the inguinal. The diagnosis is easy. Melanotic sarcoma only differs from hæmorrhagic sarcoma in a minor point, viz., its colour, not in any important feature. One case reported under this title proved on better examination to be chorion epithelioma.

Treatment.—The only possible treatment is to remove the tumour.

Noma.—This rare* morbid process occurs in children who have been debilitated by infectious, febrile, or wasting diseases, such as measles, scarlatina, typhoid, typhus, phthisis, etc. It begins as a dark livid red, hard swelling of one labium only. This first presents vesicles, which break down into dirty grey or bluish-red ulcers ; and the ulcerated surfaces become a yellowish-grey or greenish-black layer of gangrene. This gangrene may destroy the whole labium, and extend to the vaginal orifice and the mons veneris. The prognosis is very unfavourable. The treatment consists in the free destruction of the whole of the sloughing surface with the actual cautery, and subsequent frequent washing of the parts with an antiseptic solution, such as 1 in 40 of carbolic acid.

Acute gangrene of the vulva in adults.—This is rare. Cases may be grouped into four classes : (1) Those occurring in the course of acute specific disease. (2) Those occurring as an epidemic puer-

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* For an account of noma, *see* Kinder Wood, *Med.-Chir. Trans.*, vol. vii., 1816.

peral disease. (Several epidemics of it were reported in pre-antiseptic times. Thanks to Lord Lister, these epidemics are now of historical interest only.) (3) An acute inflammation of the genitals, arising independently of contagion, and going on to gangrene, occasionally occurs. The process is bilateral, and ends in the production of a large black slough, after which it spontaneously ceases. It may destroy the skin of the labia, perineum, margin of anus, and lower part of vagina and urethra. It is probably due to some poison, and the bilateral distribution of the change points to the poison being in the blood. After separation of the slough, the inflammation ceases, and all that is needed is to keep the part clean ; and, if healing be slow, to apply stimulants; such as tr. benzoin co. (4) Rapidly spreading gangrenous erysipelas. As this is not peculiar to women, I do not describe it here.*

* For an account of these forms of disease, *see* a paper by the Author, *Obst. Trans.*, vol. xxv., 1884.

CHAPTER XXXVI

SWELLINGS OF THE VULVA

In some of the conditions I have now to describe there is also soreness, but swelling is that which more attracts attention.

Warts of the vulva.—This disease begins as a few scattered outgrowths. If neglected, they grow, and more come. They form pointed outgrowths, not flat patches like condylomata. When large and many they grow mostly on the labia, but also on the clitoris and mons veneris, the genito-crural fold, the perineum, and within the vagina. Such warts have been seen forming a cauliflower-like mass as big as a child's head. The secretions retained in the sulci between the warts decompose and become offensive. There is copious foul discharge, but not bleeding. The outgrowths are usually roughly symmetrical. Vulval warts grow faster during pregnancy, and retrograde during the puerperium. Microscopically examined, their structure has been found to be that of an overgrowth of the papillæ of the skin.

Etiology.—Warts are generally associated with gonorrhœa ; and they do not occur in women who are both chaste and clean, nor in those who, when they get venereal disease, promptly seek treatment. But they are seen occasionally in children, and in young women whose chastity there is no reason to doubt. They are not inoculable.

Treatment.—When the warts are small, it will be enough to keep the part very clean and as dry as

possible ; and if this is not enough, to touch the individual warts with caustic. Prescribe a vaginal douche of zinc chloride, gr. v. ad Oj., to be used twice
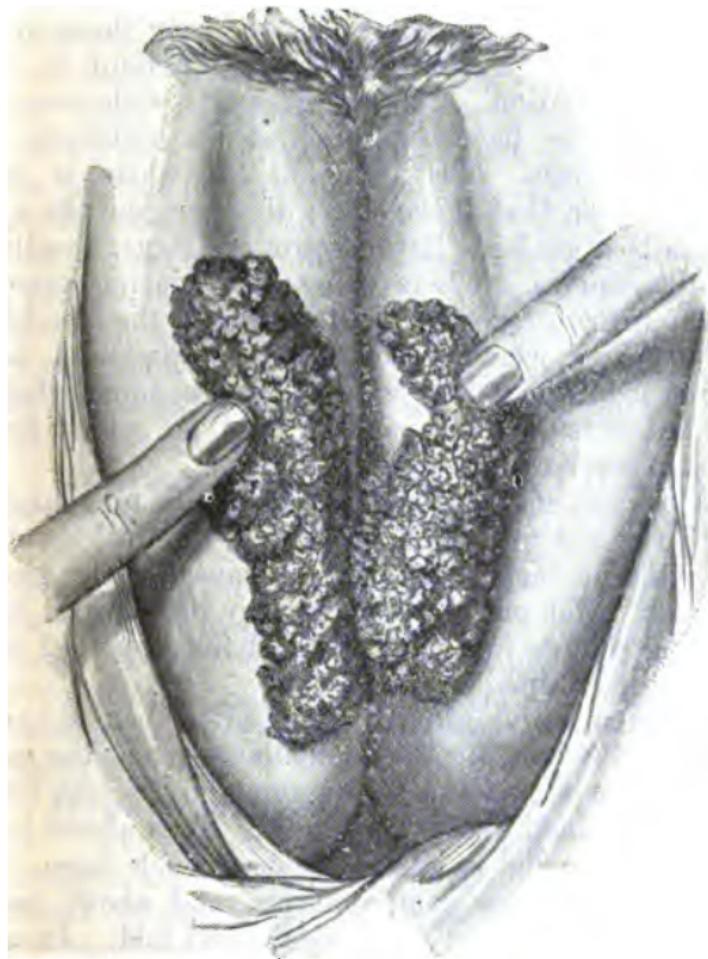
Fig. 120.—" Oozing tumour of labia " (warts of vulva).
(*After Emmet.*)

or thrice daily. Tell the patient, after using it, to hold the labia apart with one hand, and with the other puff from an insufflator oxide of zinc over the whole mucous membrane of the vulva. Warts that

are small and few will dwindle with this treatment.
If some remain obstinate, touch them with either
nitric acid or carbolic acid, applied with a pointed
glass rod.

If they are too large for this, the only thing is to
cut them off. Put the anæsthetised patient in the
lithotomy position. Cut off the warts with scissors
curved on the flat, beginning at the outskirts of
the main mass. The tissue of the warts is less
resistant than that of the skin ; this fact and the eye
are the best guides. If the warts are large, bleeding
may be copious. Where you see a spouting vessel,
seize it with forceps and tie it. Most of the bleeding
will be oozing, which can be stopped by pressure. Let
pads of iodoform gauze be held on the oozing surface,
and put outside these pads of wool on which firm
pressure can be made by a **T** bandage.

If the patient be in the second half of pregnancy,
it is better not to meddle with the warts until involu-
tion after delivery is complete : because (1) the great
vascular development of pregnancy will make the
bleeding profuse ; (2) during the lying-in period the
warts will get smaller.

Bartholin's gland is situated behind and
outside the vagina, in the triangular space at the side
between the vagina and the rectum, and is about two-
fifths of an inch above the hymen. It is about half
an inch from the ischium, about an inch from the
free border of the labium majus, and about two-
fifths of an inch from the genito-crural fold. In ap-
pearance it is more like the lachrymal gland than any
other. It varies in size and shape in different women,
in the same woman at different ages, and on the two
sides. It is largest during the years of sexual activity.
It is flattened from within outwards, convex on its
external, flat on its internal surface. It is separated
from the vagina by the deep perineal fascia, and there-

fore, when inflamed, it never bursts into the vagina. Its outer and anterior part is in relation with the fat of the ischio-rectal fossa ; behind and internally it is in relation with branches of the pudic artery, nerve, and vein. ' The excretory duct of Bartholin's gland runs from below upwards, from behind forwards, and from without inwards ; it is little more than half an inch long, and opens in the angle formed by the junction of the hymen with the vaginal orifice.   In health its opening is formed by a falciform valvular fold of mucous membrane ; and it is not easy to pass a probe along it.   Its secretion in health is tenacious, colourless and transparent.   In function, Bartholin's gland seems to be related to the clitoris, and under the influence of the ovary, for its secretion is poured out under sexual excitement.

Etiology.—Disease of Bartholin's gland has not been seen before seventeen, nor after forty-five, and is not common after thirty.   When seen after this age, it is generally found that disease has been long present. The causes which seem to provoke it are incidents connected with the sexual functions—the accidents of pregnancy and labour, excessive or violent intercourse or attempts at intercourse, gonorrhœa, masturbation.

Hypersecretion.—The discharge which women call " whites " is sometimes partly furnished by Bartholin's glands.   Erotic dreams are often accompanied by discharge, and sexual desire is attended with moisture of the vulva, which it is believed comes from these glands.   In some cases, in which great violence, or gonorrhœal infection, has set up the disease, the secretion may be purulent ; with this there may be itching and soreness of the vulva.   Thus we have cases intermediate between hyperæmia with increased secretion, and abscess.

The treatment of discharge of this kind consists

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in the discovery and removal of the cause, if possible ; the relief of hyperæmia and irritation by sedative douches, and dusting the vulva with a sedative powder. Remedy also any defect in the general health, such as anæmia or insomnia, by appropriate treatment.

Enlargement of Bartholin's gland.— The causes which produce hypersecretion from Bartholin's gland lead also to its enlargement. The enlargement may be big enough to swell the labium visibly ; or it may be felt by taking the hinder part of the labium between the thumb and forefinger. It may be due to one of four conditions :

1. Inflammation, the gland being swollen, just as every inflamed gland becomes swollen.
2. Fibrous induration.
3. Cyst formation.
4. Abscess.

1. **Inflammation.—**The gland is enlarged and tender, but it feels solid, and may feel lobulated. It is not elastic or fluctuating. Under the influence of rest it gets smaller and less tender. Sexual intercourse is painful, and makes the condition worse, as does local violence of any kind.

2. **Fibrous induration.—**The gland may be converted into a mass of fibrous tissue. These morbid states are consequences of the long-continued action of those causes which promote hypersecretion.

3. **Cysts of Bartholin's glands.—**Bartholin's gland may have its duct stopped up, and thus its secretion retained, and the gland converted into a cyst. Huguier * divided these cysts into two kinds : (1) Those formed out of the excretory duct. These alter the form of the external genitals more than the

* *Mém. de l'Acad. de Méd.*, 1850, t. xv.

other. They are in the lower third of the affected labium, and bulge it out, so that the labium seems divided into two parts. (2) The second group are those formed out of the gland itself. These are deeper-seated, and are rounded. As they get larger they extend backwards by the side of the vagina towards the rectum. The cyst contents are either yellowish and tenacious, of the consistence of albumen, or thick and brown (from admixture of blood), or purulent. The usual size of such cysts is about that of a cherry. Exceptionally they are larger, up to the size of a hen's egg. Cysts larger than this are rare. The closure of the duct is attributed to antecedent inflammation. This is often gonorrhœal; therefore labial cysts and abscesses, like vulval warts, are often seen in prostitutes.

Diagnosis.—These cysts are in most cases easily diagnosed from their shape, size, and elasticity or fluctuation. *Fatty* or *fibrous tumours* of the labium do not fluctuate, are nearer the surface of the labium than cysts of Bartholin's glands, and are not painful. Cysts of Bartholin's glands differ from *hydrocele of the canal of Nuck*, in that the latter is situated in the anterior half of the labium majus, and cannot be pressed farther downwards, nor can it be reduced; from its upper pole a band can be felt running up to the external inguinal ring; as its contents are watery, it is translucent. A large Bartholin's cyst might possibly be thought a *unilateral hæmato-* or *pyo-colpos*. But pressure in the upper part of the vagina would in the latter condition communicate an impulse to the lower part of the swelling; not so if the swelling were a cyst of Bartholin's gland.

Treatment.—The best treatment is excision. If the cyst is merely incised, the incision will close and the cyst refill. If a large piece is cut out of the cyst-wall, and the wound carefully dressed daily, its edges

may cicatrise without closure of the opening, and cure
will be obtained. Security against relapse is only
attained by dissecting out the cyst. When the cyst
is small, this is easy. If the cyst be large, it is diffi-
cult ; there is likely to be much bleeding from deep-
seated vessels ; there is risk of wounding the rectum ;
and the skin of the labium may have to be dissected
off so extensively that, being deprived of blood
supply, some of it may slough.

Operation.—Put the anæsthetised patient in the
lithotomy position. Make an incision through the
skin along the whole length of the tumour, over its
most prominent part, and parallel with the labium.
The skin is usually movable over the tumour, some
cellular tissue intervening. Cut down to this cellular
tissue. Then with the handle of the scalpel separate
the tumour from its surroundings. Take plenty of
time, and be gentle. If you proceed roughly you will
rupture the cyst, and then it will be more difficult to
get it out. The handle of the scalpel will not separate
the tumour behind. When you get to the back of
the tumour there will be some bleeding. Tie bleed-
ing vessels as they are wounded. When you have got
out the tumour, put in a drainage-tube, and bring
together with stitches the raw surfaces. Dust the
wound with iodoform, and see that it is kept clean.

4. **Abscess.**—An abscess may form either in
duct or gland. (1) *In the duct.* These abscesses
are often bilateral. They never exceed the size of a
very small walnut. They are seated in the thickness
of the lower part of the labium minus. They form
quickly ; in ten or twelve hours the mucous mem-
brane becomes tense, and there is redness around the
swelling. They open spontaneously within two or
three days on the inner surface of the labium minus
(Fig. 121). (*a*) The opening may be formed by the
duct becoming again patent. In this case the swell-

ing may take three to seven days before it subsides, for the pus does not escape freely. A probe put into the opening will be found to enter a smooth-walled, rounded cavity immediately beneath the mucous membrane. The pus is more viscous than ordinary
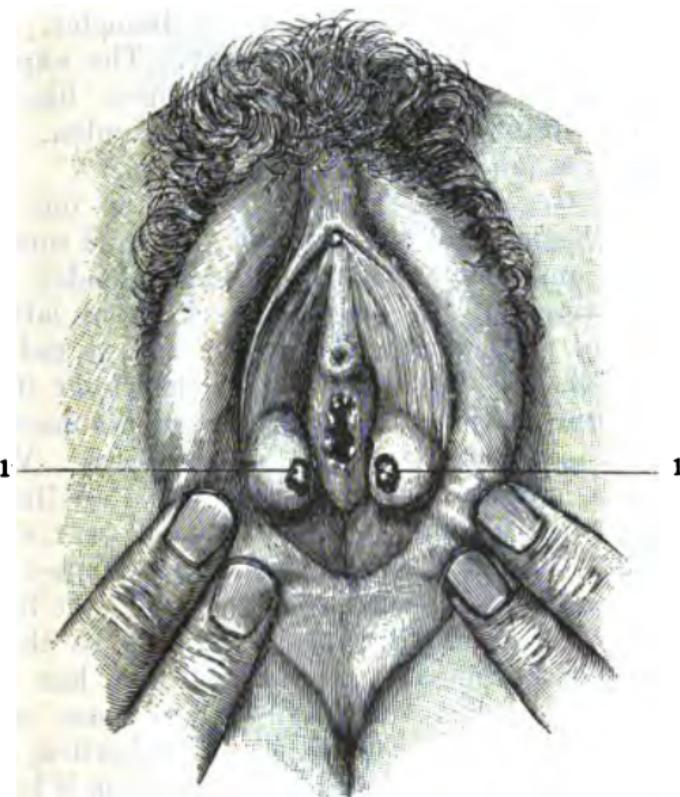
Fig. 121.—Abscesses in the ducts of Bartholin's gland.
(*After Huguier.*)

1, Opening of abscess.

pus, for it is mixed with the secretion of the gland. Recurrence of suppuration is apt to take place after the part has apparently got well. (*b*) The pus may escape partly by the duct, partly by bursting of the cyst-wall. In this case the closure of the cavity is

quicker; it is usually well within three days. But as the discharge can escape through the duct as well as through the opening, the latter sometimes heals, and then recurrence of suppuration may take place. (c) The abscess may open by its wall giving way, and not through the duct. As the wall is thin, the opening is large, half an inch or so in diameter. The symptoms are relieved immediately. The exposed lining membrane of the duct becomes like the mucous membrane of the rest of the vulva. The opening does not close.

(1) *In the gland.* This is usually on one side only. It begins with heat, itching, pain, and soreness of the labium, which swells and becomes tender. The seat of pain is at the posterior part of the labium, in front of and outside the anus; and it radiates thence. The larger the swelling, the closer it approaches the ischium. The inflammation sometimes subsides, but more often goes on to abscess. When an abscess has fully developed, it forms a swelling in size from that of a nut to that of a small pear, rarely larger (Fig. 122). It extends backwards farther than the labium, but never as far as the anus. It bulges internally towards the opposite labium, so that it effaces folds of mucous membrane; and has been known so to occlude the vagina as to cause retention of secretion in the canal. On palpation, it is found that the posterior third of the labium is bulged by a rounded, tender swelling. The swelling remains firm for two or three days, and then begins to fluctuate, the fluctuation being earliest and most distinctly felt on the inner aspect of the swelling. The abscess bursts on the inner surface of the labium, never on its outer surface or its free border. When the abscess has burst, a probe put into its cavity passes in a direction towards the ischial tuberosity for about an inch; it enters a cavity with an anfractuous wall. Abscesses

of Bartholin's gland never open into the rectum, nor
does the pus they contain have a fæcal smell.   When
the pus has found vent the symptoms are relieved, and
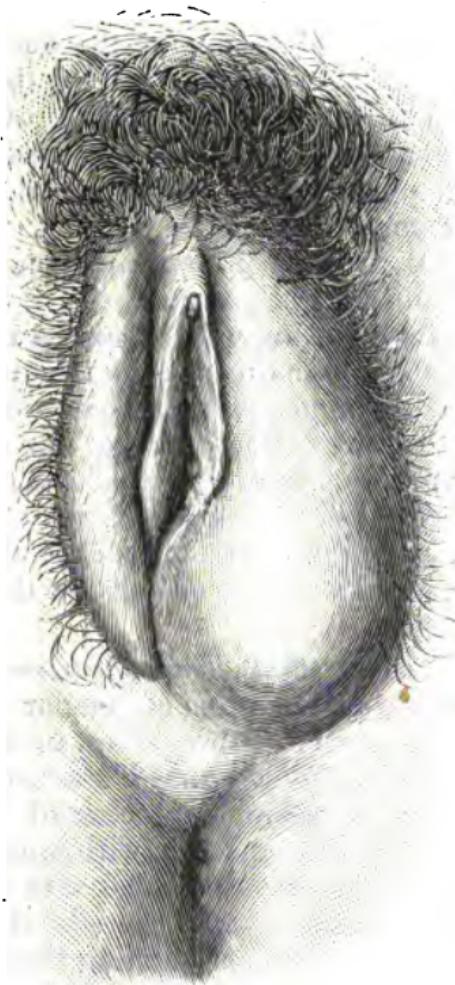
Fig. 122.—Abscess of Bartholin's gland.   (*After Huguier.*)

the abscess closes in four or five days.   The duration
of the whole illness is between two and three weeks.
The treatment of a suppurated Bartholin's gland is

to remove it, in the same way as a cyst of the gland. If this is not done, suppuration will recur.

Abscess of the gland thus differs from abscess of the duct in being (*a*) more deeply situated, (*b*) slower in formation and in pointing, (*c*) larger, (*d*) more painful, (*e*) seldom discharges by the duct, (*f*) when it bursts the opening is not so large, (*g*) its interior is anfractuous, not smooth and regularly ovoid.

Complications may coexist with abscess of Bartholin's gland : inflammation of inguinal lymphatic glands ; inflammation of the mucous membrane, skin, or cellular tissue of the vulva beyond the situation of Bartholin's gland ; vaginitis.

Other kinds of suppuration in the vulva. —Abscess of the labium due to inflammation of Bartholin's gland is commoner than that from all other causes put together. There are a few other rare causes of suppuration in or near the labia.

1. *Furuncle.*—An ordinary boil may appear on a labium majus. The course of such boils does not differ in any way from that of boils on the nucha or on the buttock.

2. *Erysipelas (so-called) of cellular tissue.*—Spreading suppurative inflammation of cellular tissue used to be occasionally seen in pre-antiseptic times.

3. *Abscess of rectal origin.*—These are the abscesses which most resemble abscess of Bartholin's gland. They arise in connection with organic disease of the bowel. Symptoms connected with the rectum are the first to appear, and precede the abscess. These abscesses are slower in bursting than is abscess of Bartholin's gland. The swelling is less distinctly limited ; it does not form a definite globular or ovoid tumour. An abscess of rectal origin seldom bursts into the vagina. If it does, it is usually on the posterior wall, near the fourchette, not where the duct of Bartholin's gland opens. Its pus has a fæcal

odour. The treatment of such abscesses is to open and drain them, so that they may close from the bottom and not leave a fistula.

4. *Traumatic abscess.*—An abscess may be pro-· duced in the labium by violence, such as a fall or a blow, especially if combined with venereal infection. Such an abscess does not form so definitely limited a swelling as that of a suppurated Bartholin's gland. You will get a history of the incidents which caused it.   When it has burst, it heals, and does not relapse.

Lipoma.—Overgrowths of fat occasionally occur in the labium and in the mons veneris. They are rare. These growths are circumscribed lumps, irregular in shape, made of soft elastic lobules. They cause trouble only by reason of their size and weight. The only treatment is removal.

Fibromata,—Fibroid enlargements occur in the labia. They may become polypoid, as in Fig. 123.   They only cause symptoms by their size and weight.   The treatment is their removal with the knife.

Elephantiasis.— This disease depends on blocking of the lymphatic vessels by the *Filaria san- guinis hominis*, a parasite only found in the tropics. The lymph cannot return, swells the affected parts, and develops into fibrous tissue.   This disease is rare in old women and in children, and is of slow development. It affects most often the labia majora, then the clitoris, and least often the labia minora ; often all these parts are affected. The affected parts sometimes form a tumour weighing twenty pounds or more.   Its surface is irregular, nodulated, seamed with fissures, often excoriated and ulcerated. The secretions of the diseased surface become very offensive. The lymphatics are swollen and indurated. Elephantiasis of the vulva produces

L*

trouble mechanically, by its size and weight, and also by the offensiveness of the discharge.
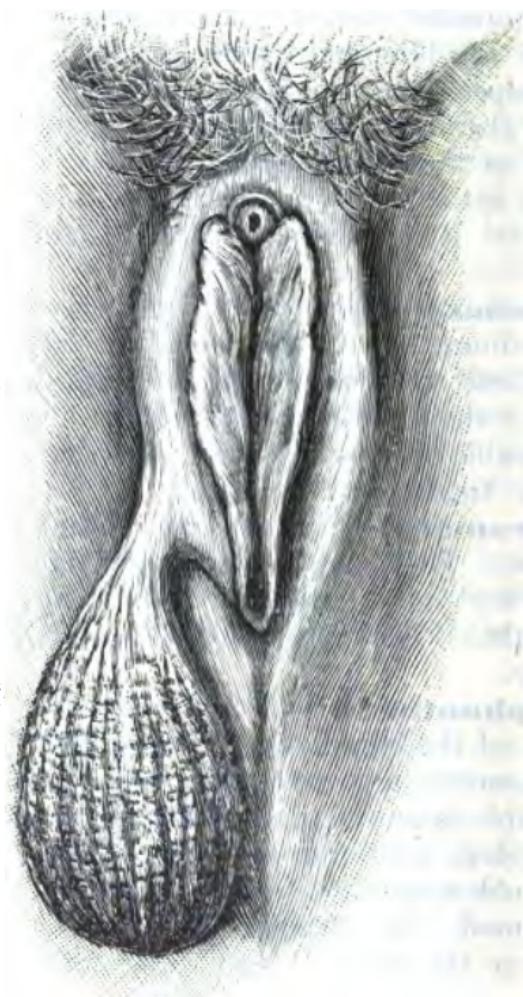
Fig. 123.—Fibrous polypus or molluscum fibrosum of labium.
(*After Burgess, from a patient of the Author's.*)

The only treatment is to cut away the mass. Before this is done, the patient should keep recumbent

and with the tumour raised for an hour or two, that as much blood as possible may drain out of it. Hæmorrhage must be arrested by tying bleeding points or compressing them with sutures. When the tumour is growing from the clitoris, the urethra is dragged down, courses along the upper and back part of the growth, and must be dissected out before the tumour is amputated.

Hypertrophy of the labia minora.—The labia minora are sometimes so long as to occasion annoyance. They may cause local discomfort, irritation, and get swollen from œdema. Great enlargement is rare in Europeans, but is common in certain African races, forming the so-called "Hottentot apron." The only permanent cure is to cut off the labium with scissors, and stop bleeding by sewing the inner and outer skin edges together.

Hypertrophy of the clitoris is occasionally seen ; that is, the organ is larger than usual, but is in every other respect healthy. There is no relation between the size of the clitoris and the sexual activity of the owner.

Hypertrophy of the labia majora.—Simple chronic enlargement of the labia majora without alteration in shape has been seen. Removal is the only treatment of such hypertrophy.

Varices of the vulva.—In women who have had many children the labia are sometimes enlarged by varicose veins. If the patient becomes pregnant, she runs risk of painful or even fatal results from the bursting of such veins. No treatment short of excision can alter this condition.

Hernia.—A labium may be enlarged by a hernia. Labial hernias are seldom so large as scrotal hernias. The ordinary hernia which descends into the labium is inguinal hernia.

Two other hernias special to the female have been
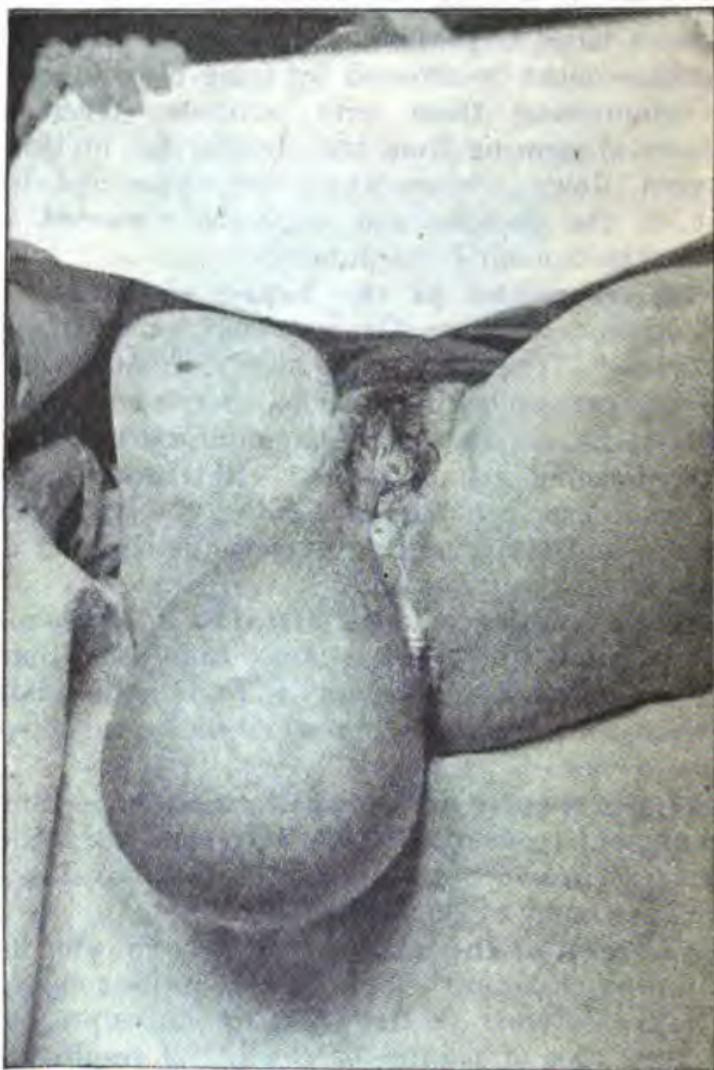
Fig. 124.—Descent of perineal hernia in front of broad ligament
(*From a photograph, by permission of Dr. W. Smyly,
and of Messrs. Macmillan and Co., Ltd.*)

described—one which bulges through an opening in
the pelvic fascia in front of the broad ligament, and
bulges down by the side of the vagina into the labium

(Fig. 124); and one which descends through an opening in the pelvic fascia behind the broad liga- ment, and comes down between the vagina and rectum, bulging in the perineum. The mark of these swellings is that they are reducible, and go up with a gurgling sound. Their treatment is in the pro- vince of the general surgeon.

PART VIII

DISORDERS OF MENSTRUATION

CHAPTER XXXVII

MENSTRUATION

What is menstruation?—Menstruation is the expulsion of the menses—that is, broken-up endometrium and blood—from the uterus. The average age of its commencement is fourteen, and of its cessation from forty-five to fifty. Its advent is hastened by luxury and libidinous excitement; retarded by hard living and freedom from sexual ideas. Menstruation usually recurs about every twenty-eight days. Variations from the normal rhythm are common, but are not important. The duration varies from one day to nine or ten ; five is about the average. The quantity lost is usually from four to six ounces, but it varies much in healthy women. Complete absence of the flow is compatible with good health. The quantity is too great if the patient suffers from anæmia afterwards. A white or yellow discharge for two or three days after menstruation is common. Menstrual blood is dark in colour and, as a rule, the secretions of the uterine and cervical glands prevent it from clotting. If these secretions are not in due proportion to the quantity of blood, the blood clots.

    Menstrual changes in the endometrium. —Discrepant statements have been made as to the changes in the endometrium. If the accounts be

compared it will be seen that in major points the statements of different observers are in harmony with one another, and that they are only discrepant upon minor points. All agree that before menstruation the human endometrium is thicker, and that after men-
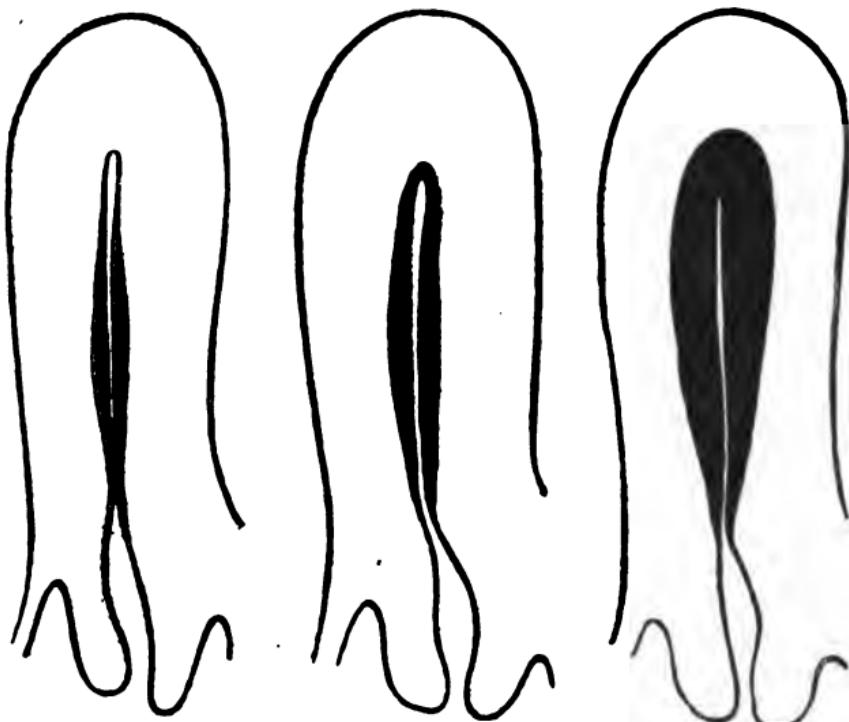
Fig. 125.   Fig. 126.   Fig. 127.

Fig. 125.—Uterus three days after menstrual flow has ceased. The shaded part represents the renewed mucous membrane.

Fig. 126.—Uterus a week after menstrual flow has ceased. The shaded part as in Fig. 125.

Fig. 127.—Uterus just before menstruation. The shaded part represents mucous membrane.

(*After Sir John Williams, " Obstetrical Journal," Nov.,* 1875.)

struation it is thinner (Fig. 125) ; that there is in women a growth of the endometrium during the

intermenstrual period (Fig. 126), and a disintegration of it during menstruation. The thickness of the endometrium before puberty is about one-twenty-fifth of an inch; before menstruation, from one-eighth to a quarter of an inch (Fig. 127); after menstruation, about one-twelfth of an inch. All observers agree that hæmorrhage takes place into the endometrium. The points of difference are as to the mode of hæmorrhage, whether by diapedesis or laceration of vessels; as to the mode of disintegration, whether by fatty degeneration or not; as to the extent of disintegration, whether the whole mucous membrane is shed or only part of it; and as to the mode of regeneration, whether from muscular tissue or from remaining cells of the endometrium. Now, these are points most difficult to determine, for views on these matters are based upon appearances which may have been modified by *post-mortem* decomposition.

Does the uterus contract during menstruation?—I believe that it does. Sometimes the uterine contractions are painful. The pain of dysmenorrhœa is like that of painful uterine contractions. Uterine contractions have for their function to expel the contents, and are normally accompanied with dilatation of the cervix.

Vascular changes with menstruation.— Before menstruation there is an increased flow of blood to the pelvic organs. When menstruation begins, contractions of the uterus squeeze the blood out of that organ; but the congestion of the other pelvic organs is not relieved until the menstrual hæmorrhage is free. This congestion produces in most women a disagreeable feeling of fulness in the pelvis, and a little backache and lassitude. There is increased vascular tension everywhere. Hæmorrhage from other parts may occur, and if this is copious it

may so weaken the patient that the menstrual bleeding may not come on. This is the explanation of some of the cases of so-called vicarious menstruation.

Relation between ovulation and menstruation.—*Ovulation* is the liberation of the ovum from the ovary : *menstruation* indicates the monthly preparation of the uterus to receive the fertilised ovum. These two processes have a common aim, but no closer connection. The ovaries are essential for every part of the reproductive process ; the uterus is not. Ovulation occurs without menstruation.

Does ovulation coincide with menstruation.—The most recent observations go to show that ovulation does not always coincide with menstruation, though it generally does. Women are undoubtedly more likely to conceive during the week following menstruation than at any other time ; but conception *may* take place at any time.

The corpus luteum. — When a Graafian follicle has burst, there remains a cavity having a wrinkled yellow lining and containing clot. This yellow lining is called the *corpus luteum*. It is formed of large epithelioid cells, much like decidual cells, arranged in regular rows and columns, with capillaries between them, in a manner resembling an acinus of the liver, or the cortical layer of the suprarenal body. These cells are called *lutein* cells. The corpus luteum controls the nutrition of the uterus.

It is believed that, if no pregnancy occurs, a corpus luteum persists for two or three weeks after rupture of the follicle. Then it is eaten up by leucocytes, and gradually disappears. If pregnancy occurs, the corpus luteum stimulates the growth of the uterus, retains its full size for three months, and then gradually gets smaller.

Morbid changes may occur in the corpus luteum. There may be hæmorrhage—lutein hæmatoma ; or

suppuration—lutein abscess ; or the development of a cyst. With the so-called " vesicular " or " hyda- tidiform " mole there has been found, in the cases in which it has been looked for, a large quantity of lutein tissue. It is after this kind of mole that chorion- epithelioma so often occurs. Lutein tissue thus seems to stimulate abnormal as well as normal growth of trophoblasts.

Menstruation depends upon ovulation.— When the ovaries are imperfectly developed, menstrua- tion does not take place. When they are removed, menstruation stops.

CHAPTER XXXVIII

DYSMENORRHŒA

What is dysmenorrhœa ?—Most authors mean by it pain recurring regularly once a month. In this sense it is a symptom, which may be due to various causes. Matthews Duncan restricted its application to painfulness of the uterine contractions which expel the menstrual decidua. In this sense it is a disease.

Unavoidable errors in treating dysmenorrhœa.—We are dependent upon the patient's statements as to the fact of pain, and as to its kind and severity. A sensitive patient may suffer much from the menstrual congestion, although there is nothing abnormal except her sensitiveness. Nothing will cure such menstrual pain. The problem is to distinguish these cases from those that can be cured.

Kinds of menstrual pain.— Menstruation may cause pain in two ways : (1) The uterine contractions which expel the blood and the decidua may be painful. (2) The congestion of the pelvic organs, which is at its height just before menstruation, may be painful. This pain from congestion is a reflected pain felt over the area supplied with sensory nerve fibres from the tenth and eleventh dorsal segments of the spinal cord, and, when severe, is accompanied with superficial tenderness of the skin. The breasts often ache.

Monthly pain due to painful uterine contractions. — There are three forms of the

dysmenorrhœa which consists in painful uterine
contractions. These are :

>   1. Obstructive.
>   2. Membranous.
>   3. Spasmodic.

I.—OBSTRUCTIVE DYSMENORRHŒA

Former errors.—(*a*) It was at one time thought
that when the uterus was bent the canal was bent
at an angle ; that blood accumulated behind this
obstruction, and dilated the uterine cavity. It is
now known that when the uterus is bent the thickness
of its wall makes the curve in its canal a gradual
one. There is no such thing as obstruction of the
canal of a healthy uterus by bending.

(*b*) It was said that dysmenorrhœa was due to
" stenosis " of the canal, which was too small to let
the blood through. But the cure of dysmenorrhœa
by dilatation is not merely a case of opening up an
orifice too small to let the blood pass.

**Real causes of obstructive dysmen-
orrhœa.**—The most characteristic cases are those in
which the cervix has been *amputated* for cancer, and
at the point at which it was cut off the canal is sur-
rounded with a ring of cicatricial tissue. The cica-
tricial tissue contracts. Hence, often the patient
comes back complaining of pain with menstruation,
getting worse month after month. In *cancer* of the
cervix the new growth may so block the cervical
canal as to cause painful menstruation, and even
retention of menstrual fluid. The same thing may
happen from a *fibroid*.

Diagnosis of obstructive dysmenorrhœa.
—This rests on : (1) The pain is recently acquired ;
it never dates from the beginning of menstruation.

(2) It has followed an operation, or it has been preceded by symptoms such as a new growth produces.
(3) If the patient has been pregnant she will say that the pain is like that of labour or abortion. The cause of the pain is to be found out by physical examination. Difficulty in the passage of a probe, and gripping of it when passed, will demonstrate obstruction. The treatment is removal of the obstruction.

In cicatricial stenosis, having found the canal with a probe, insert the point of a bistoury and enlarge the canal by cutting. Place in the canal a glass or vulcanite stem about a quarter of an inch shorter than the length of the canal. Let the patient wear this for about three weeks, so that the cut surfaces may not unite again, but heal over apart from one another without uniting. The patient is safer in bed while she is wearing the stem.

II.—MEMBRANOUS DYSMENORRHŒA

What is membranous dysmenorrhœa?—Membranous dysmenorrhœa is a disease in which the endometrium is shed entire, like a cast of the uterus, or in large pieces. These pieces stick in the canal, and provoke painful uterine contractions.

Frequency.—We have no exact knowledge what proportion of women pass membranes during menstruation, because women seldom notice membranes in the discharge unless they look for them. They generally take them for clots. Membranes are sometimes passed without pain. The presence and severity of the pain depend much on the state of the nervous system.

Monthly abortion. — In some cases these membranes are monthly abortions. We know not why these patients abort every month; but cases enough have been published to put the fact beyond doubt.

Causation. — We know practically nothing about the causes of membranous dysmenorrhœa. It sometimes occurs in otherwise healthy virgins at the beginning of menstruation. It has been attributed to " inflammation." We have no knowledge what kind of inflammation causes it, or why. It has been attributed to an excess of fibrous tissue in the uterus. But this is a theory.

Diagnosis.—The diagnosis of this form of dysmenorrhœa is made by the discovery of the membranes. The pain increases in severity until the membrane passes, and then at once improves. The severity of the pain depends upon the patient's general health ; worse when this is depressed, better when this is good. The increased pain is partly because more forcible contractions are needed, partly because the os internum is sensitive and the membrane irritates it.

Characters of the membrane.—A complete dysmenorrhœal membrane is a flattened triangular bag, a cast of the uterine cavity. It is formed of two triangular pieces, and where these join, at the top and sides, it is thinner than elsewhere, and therefore often the two pieces are separate. Its outer surface is rough, its inner surface marked with sulci and dotted with little pits. Microscopically, it is formed of connective tissue, thickly studded with small round cells, and containing vessels and gland tubes lined with columnar epithelium (Fig. 128). Diagnosis is chiefly important in cases in which the passing of a membrane leads to imputations on the patient's chastity. An aborted ovum has a decidua reflexa and an amnion. Nothing like these structures is found in a dysmenorrhœal membrane. Two histological features mark a membrane as the product of pregnancy : (*a*) large decidual cells ; (*b*) chorionic villi. The latter are characteristic. Chorionic villi

as seen on section are approximately rounded or oval in shape, bounded by a layer of deeply staining proto-plasm, showing no distinct cell outlines, but containing nuclei irregularly placed in numbers varying at different places. This is called the *syncytium*. Within this are cells with lightly staining protoplasm, rounded and deeply staining nuclei. These are what is called
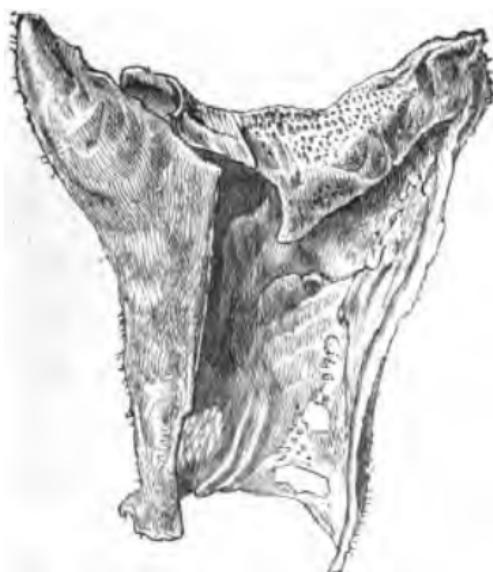
Fig. 128.—Dysmenorrhœal membrane. Natural size. (*After R. Barnes, from a specimen,* G G 4, *in the Museum of St. Thomas's Hospital.*)

the layer of Langhans : in the adult placenta they form a single layer only (Fig. 129). Decidual cells have been seen in membranes not formed in pregnancy ; so it is unwise to insist on an opinion based on this appearance alone. In any case in which there is doubt as to whether abortion has taken place or not, the benefit of the doubt should be given to the patient—against pregnancy, if she is not married ;

in favour of it, if thinking she has been pregnant will make her happier.
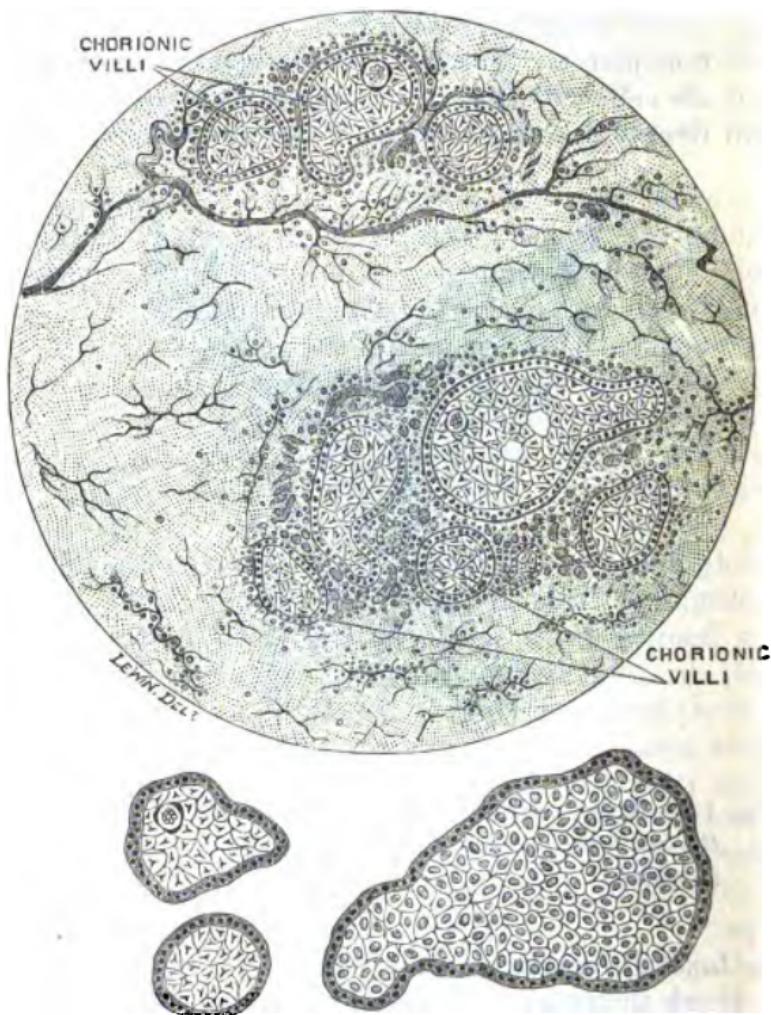
Fig. 129.—Microscopical characters of chorionic villi on section. Diagrammatic. (*After Bland-Sutton.*)

The *decidua of extrauterine pregnancy* differs from the decidua of menstruation in being larger and thicker, and in containing large decidual cells.

Treatment.—There is no treatment from which cure can be predicted. The methods of treatment are four :—

1. General tonic treatment.
2. Empirical drug treatment.
3. Local treatment.
4. Radical.

1. **General tonic treatment.**—Regular and abundant sleep ; frequent and suitable meals ; aperients as often as required ; sunshine, fresh air, and moderate exercise ; iron, quinine, or arsenic if indicated ; change of air.

2. **Empirical drug treatment.**—We know of no drug that will certainly cure. I have no doubt that guaiacum sometimes cures, though I know not how ; its appearance and taste, and that it sometimes purges, are its drawbacks. If the patient is one of the active, irritable type, give arsenic a good trial. The power of this drug over scaly skin diseases (psoriasis, pemphigus, etc.), and upon nutrition generally, makes it a reasonable expectation that it may modify the endometrium. Its action upon the nervous system, as shown by its effect in gastralgia, is an additional reason for expecting it to do good. I have seen cure follow the administration for several months of pot. chlor. gr. x., Aletris cordial ʒj., three times a day. The best drug to relieve the pain is antipyrin. Begin with gr. xv. three times a day, with spt. chlorof. ʒss. If antipyrin does not suit, try phenacetin, beginning with gr. x. as a dose ; or aspirin, gr. xv.

3. **Local treatment.** —In membranous dysmenorrhœa, dilatation of the cervix almost always does good. Sometimes benefit is permanent ; more often it only lasts a month or a few months, and the patient may get tired of having it repeated.

4. Radical treatment.—This consists in the stoppage of menstruation by spaying, or by hysterectomy. The pain is seldom bad enough to make a sensible patient think the consequences of the artificial menopause worth incurring. Removal of the ovaries or uterus is better than letting the patient get the morphia or chloral habit.

III.—SPASMODIC DYSMENORRHŒA

What is spasmodic dysmenorrhœa?—This disease is so called because in it the uterine contractions which accompany menstruation are "*spasmodic*"—that is, violent, sudden, and painful.

Theory of spasmodic dysmenorrhœa.—There is an antagonism between the body and the cervix uteri. When the cervix is dilated the body contracts. In spasmodic dysmenorrhœa the want of physiological relaxation of the cervix prevents normal regular painless contraction of the body. When the circular fibres of the os are weakened by stretching, then the body contracts in a normal way. In spasmodic dysmenorrhœa, a bougie as large as the cervical canal will usually admit can be passed through it.

Diagnosis of spasmodic dysmenorrhœa.—In spasmodic dysmenorrhœa there is no peculiarity about the uterus or the genital organs, or any other part of the body, from which we can say that the pain is spasmodic. The diagnosis has to be made from the characters of the pain and the history.

Characters of the pain.—They are these:—(1) *Great severity*. (2) It is *paroxysmal*. The pain caused by pelvic congestion is a continuous aching. (3) *Short duration*. Often it lasts only a few hours. But (*a*) the spasmodic pain may be preceded and followed by pain due to pelvic congestion ; (*b*) in some cases the uterine contraction is tonic, not clonic.

These are exceptional. (4) *The effect of position*. The pain of pelvic congestion is relieved when the patient lies down, but the pain of spasmodic dysmenorrhœa is not lessened by lying down. Many say they cannot lie down, but roll about when the attacks of pain come. (5) *The seat of pain*. The pain is accompanied with tenderness of the skin over the areas supplied with sensory nerves from the tenth and eleventh dorsal segments of the spinal cord. There is often with it aching in the breasts and thighs, from the accompanying congestion of the pelvic organs. (6) *Time of pain*. It usually begins suddenly with the flow, often waking the patient up at night.

In short, the characteristic features of the pain are : its great severity, its paroxysmal character, its short duration, and its not being relieved by lying down.

Clinical history.—Spasmodic dysmenorrhœa in two-thirds of the cases dates from the beginning of menstruation. In about one-third it begins suddenly, after years of painless menstruation ; but almost always before the age of twenty-five. It may so develop either in a virgin, a sterile married woman, or a fertile woman. In some cases the dysmenorrhœa intermits, menstruation being one month painful, the next month painless. Sometimes there seems to be a definite cause for such intermission.

Spasmodic dysmenorrhœa and marriage. —Spasmodic dysmenorrhœa is often, but not invariably, associated with sterility. If the patient become pregnant, the dysmenorrhœa is usually cured. Often it is associated not only with sterility, but with absence of sexual desire and pleasure ; and sometimes with vaginismus. When, with dysmenorrhœa, sexual desire and pleasure are absent, cure of the dysmenorrhœa will often create them.

Treatment.—The only natural cure is pregnancy. It is bad for a young girl to have her thoughts dwell on her sexual organs ; and therefore, if the pain is slight, it may be better for it not to be treated. This is especially the case if the patient be contemplating marriage, for this may lead to cure by pregnancy. In such a case, therefore, postpone treatment until sterility in marriage calls for it. Pregnancy does not always cure dysmenorrhœa ; but if it does not, no other treatment consistent with preservation of the function will do so. Treatment being required, that treatment is of three kinds :

        1. General or medicinal.
        2. Local.
        3. Radical.

1. **General or medicinal treatment.**—This is of three kinds :

(*a*) **Tonic.**—If the patient be anæmic, ill-nourished, costive, sleep or eat badly, these things should be corrected.

(*b*) **Specific.**—There is no drug that will always in every case remove the pain of spasmodic dysmenorrhœa. Guaiacum will cure some cases. Give gr. x. three times a day, beginning a week before menstruation is expected. The drug that oftenest relieves is antipyrin. If antipyrin fails, try phenacetin in 10 gr. doses.

(*c*) **Narcotic.**—Sometimes the pain is so severe that the doctor is driven to use an opiate ; or the patient to take alcohol in sufficient dose to procure sleep. I mention this to advise against it. It is better to remove the ovaries than to let the patient get addicted to reliance on these drugs.

2. **Local treatment.**—Local treatment consists in dilating the cervical canal. Two ways of doing this have been practised :

(1) **Cutting.** — *Division of the external os.*—
Some cases of dysmenorrhœa can be cured by divid-
ing the external os. When I began to practise, it was
the regular treatment. On the other hand, I have
cured patients by division of an os externum which
would admit No. 12 bougie. The effect of this opera-
tion is, therefore, not mechanical.

Mode of operation.—Insert a duck-bill speculum,
note the length of the vaginal portion, fix the cervix
with a hook, and then with ordinary scissors cut
through the cervix on both sides, taking care not to
cut beyond the vaginal insertion. If this operation
is done with clean instruments, and the patient is
kept clean afterwards, it is free from danger.
Therefore, in a bad case in which dilatation has failed,
I think the vaginal portion should be divided.

(2) **Stretching.**—(*a*) The best way is the suc-
cessive passage of bougies of gradually increasing
size. Dilatation with bougies can be done without
an anæsthetic at the doctor's house, and the patient
can walk home afterwards. But the operation is
better done at the patient's house, and under anæs-
thesia. Antiseptic precautions should be used in any
case. The cervical canal will usually admit No. 6 or
7 bougie to begin with. When the bougie passes the
os internum the patient will complain of pain. The
bougie is left in the canal, and usually in two or three
minutes the pain will have ceased, and the next
size can be passed. If the pain has not subsided
within, say, ten minutes, the dilatation had better
be discontinued. The dilatation should be carried
to such a degree as to stretch the canal, but not to
tear it. Great force should not be used. I know not
what is the minimum amount of dilatation that is
enough to cure. As a rule up to No. 12 is enough.
The worst that can happen, if clean instruments are
used, is failure to cure.

I have seen cases in which a slight dilatation has cured for a short time ; then, after relapse, a larger dilatation has produced a longer relief from pain ; then yet greater dilatation has procured still longer benefit.

(b) *By tents.*—That is, by putting in the cervical canal a piece of dry laminaria, which imbibes moisture from the canal, swells, and stretches it. The disadvantage of laminaria is that it forces open the cervix with enormous and uncontrollable power. If the os internum will not expand beyond a certain size the tent swells above and below the os, and great force has to be used to get it out. This is injurious.

Prognosis from dilatation. — Generally dilatation cures, sometimes it fails. Failure may be because (1) the diagnosis is incorrect, or (2) the disease incurable. (1) The menstrual pain may be congestive or neuralgic, not spasmodic. Diagnosis is sometimes impossible, for you have to make it not from physical signs, but from female phraseology. The patient may have both congestive and spasmodic pain ; and you may cure the spasmodic pain, but the congestive pain remains. When diagnosis is doubtful, you must dilate in the hope, rather than the probability, of cure. (2) Some cases of spasmodic dysmenorrhœa are incurable. It is difficult to identify these cases before beginning treatment. If the patient has since girlhood been subject to headaches, backaches, and neuralgias ; if she is always easily fatigued ; if vaginal examination and the passage of a bougie through the internal os produce general disturbance which does not quickly pass off ; then the prognosis as to cure of dysmenorrhœa is not hopeful.

In most cases in which the menstrual pain presents the features of spasmodic dysmenorrhœa, it is cured by dilatation of the cervix. In many the pain

never returns. Some become pregnant. Some menstruate without pain for a few months or years, and then the pain returns, and can be again cured by a further dilatation. In a few, no benefit follows.

3. **Radical.**—The radical treatment of spasmodic dysmenorrhœa is to stop menstruation by spaying or by hysterectomy. Spaying robs the patient of the prospect both of maternity and marriage, for it causes atrophy of the whole generative tract, with shrinking and loss of elasticity of the vagina. Hysterectomy makes pregnancy impossible, but, if the ovaries are left behind, does not produce shrinking of the vagina or deprivation of sexual feeling: it therefore does not necessarily unfit the patient for marriage. Before advising operation be sure that the pain is really due to menstruation and to nothing else. If it is merely neurasthenic or hysterical pain which is worse when the patient menstruates, no operation will do good.

CHAPTER XXXIX

CONGESTIVE DYSMENORRHŒA

Monthly pain due to pelvic congestion.— Patients often ask for relief from monthly pain due to the pelvic congestion which precedes and accompanies menstruation. As this is a part of the menstrual process, I think it proper to call these cases also "dysmenorrhœa," distinguishing them by an adjective which indicates the cause of the pain. The disease is *congestive dysmenorrhœa*.

Kinds of congestive dysmenorrhœa.— Cases in which the menstrual congestion produces more than usual pain may be divided into three groups :

1. *Primary*, in which the pain has been felt since the patient began to menstruate.

2. *Acquired*, in which menstruation has only recently been painful.

3. *Secondary*, in which there are physical signs of disease which account for the pain.

1. **Primary congestive dysmenorrhœa.—** In these cases there seems to be nothing wrong except that the pelvic aching, such as in most women accompanies menstruation, is worse than usual. It is a manifestation of neurasthenia or hysteria. I have known a suggestion of removal of the ovaries cause nothing more to be heard of the pain.

Characters of the pain.— In these cases the pain is constant, not paroxysmal. It precedes the flow by some days ; it is worse at the beginning of

the flow, and gets better as the flow passes off. It is not so severe as to produce visible effects. It is lessened by lying down, but with effort the patient can keep about in spite of it. We know nothing of the conditions which in some young women make the menstrual congestion especially painful. The effect of treatment is in these cases unsatisfactory.

Treatment.—The only treatment is recumbency during the pain. If the patient be costive, give laxatives. After thirty-five, oöphorectomy may be considered.

2. **Acquired congestive dysmenorrhœa.**—In these cases the patient comes to be treated because she suffers more than she used to during menstruation, but has no trouble worth mentioning in the interval.

Diagnosis.—The distinguishing marks of this form of painful menstruation are : Diminution in the quantity of the flow, without anything to explain it in the patient's general condition. Wasting or anæmia may make menstruation scanty, but such lessening of the flow is not accompanied by pain, and its cause is evident. In acquired congestive dysmenorrhœa the patient is florid. With the decrease in the quantity of the flow there has come increase in the pain. The pain is not very severe. It is described as an aching, throbbing pain. It is lessened, but not removed, by lying down. It begins a day or two before, accompanies, and lasts a day or two after, the flow. It is often accompanied by slight pain in making water, and increased frequency of the desire to micturate. Examination shows no physical signs of disease.

Prognosis.—This form of dysmenorrhœa, if treated within a few months, can be cured. If left untreated the duration of the pain each month increases, and it may at length become continuous,

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and when it has thus become chronic the effect of treatment is transitory.

Treatment.—The treatment consists in local depletion : (1) *by glycerine*, or (2) *by blood-letting*. When (1) *glycerine* is put into the vagina, its attraction for water causes a transudation of watery fluid from the parts with which it is in contact. The glycerine is best used in pessaries, made of glycerine with enough gelatine to form a solid mass. Let the patient insert one such pessary as far into the vagina as she can each night. Warn the patient of the discharge which the pessary will cause. Should you not have at hand a chemist able to make these pessaries, apply the glycerine in plugs of absorbent cotton, tied round with a piece of string for easy removal. Let the patient saturate one of these plugs with glycerine and use it in the same manner as the pessaries.

(2) *By blood-letting.*—This is best done by leeches. In most places a nurse can now be got who can apply them to the cervix. Let from three to six leeches be applied. Tell the patient to send for the nurse as soon as the monthly pain begins. After the leeches have been applied, let the patient keep recumbent till all bleeding has ceased. The effect will be to relieve the pain, and in a few days menstruation will come on more copiously. If any pain linger on before menstruation and after it has ceased, let the patient use glycerine in the manner described. If this treatment be applied before the dysmenorrhœa has lasted more than six months, the effect of one leeching will probably be that the next menstruation will come on as copiously and with as little pain as when the patient was in health. But it may have to be repeated two or three times. After this the patient may go for months in health; and if the flow then becomes again scanty and painful, one leeching will again put matters right.

OTHER KINDS OF MENSTRUAL PAIN

Neuralgic dysmenorrhœa.—I restrict this term to cases of monthly pain due, not to the local process, but to the general nervous and vascular disturbance which accompanies it.

Diagnosis of neuralgic dysmenorrhœa.— The characteristic marks are : 1. The patient comes to you because she is ill when she menstruates. 2. The troubles she complains of are either not at all, or only in small part, referred to the pelvis. 3. They are numerous and multiform. 4. The patients who complain in this way are all of the weak, neurotic type—nervous, unequal to exertion, anæmic, thin, dyspeptic, sensitive, subject at all times to headaches, neuralgias, backaches, etc., which are worse than usual during menstruation.

Treatment of neuralgic dysmenorrhœa.— 1. If there be, besides the remote symptoms, local pain of a kind that can be cured, it ought to be cured. 2. The remote phenomena are such as are also seen independently of dysmenorrhœa. The treatment which is beneficial when dysmenorrhœa is not present may be applied when it is present. 3. If there are no local symptoms, nothing is gained by local treatment. Have nothing to do with spaying neurotic patients because their nervous symptoms are aggravated by the menstrual molimen.

Intermediate dysmenorrhœa means pain recurring regularly once a month, but not when the

patient is menstruating. Its punctuality, it having a regular time-relation to the menstrual flow, justifies the belief that it is connected with the menstrual process.

Its symptoms.—It comes on at a regular time after menstruation has ended, lasts a few days, and then ceases or gets less before menstruation begins; recurring on the corresponding day after the next menstruation. The pain is often associated with physical signs indicating inflammation of the uterine appendages—viz., fixation of the uterus, with thickening or lumps behind and at its side.

Their explanation.—We know not the reason for this periodical recurrence of pain. It is reasonable to think that this pain depends upon the regular monthly maturation of an ovum. This theory best explains the symptom, but as yet it has not been proved. It has been suggested that the ripening of the ovum may be painful because the outer part of the ovary is thickened so that the follicle cannot burst properly. Intermediate dysmenorrhœa is therefore one of the forms of secondary dysmenorrhœa. But I have known spasmodic uterine pain thus recur in the interval between menstruations, and be cured by dilatation.

Treatment.—Its treatment is that of the disease upon which it depends. If it be spasmodic uterine pain, dilatation of the cervix.

CHAPTER XLI

AMENORRHŒA—MENSTRUATION SUPPRESSED

The visible causes of amenorrhœa.—First *look* at the patient. Some common causes of amenorrhœa are visible—viz. (1) anæmia, (2) wasting diseases, (3) certain nervous diseases.

1. **Anæmia.**—If the patient is anæmic, that is sufficient cause for absence of menstruation.

Anæmia may come from—

> i. Deficient nutrition.
> ii. Increased waste.

i. *Deficient nutrition.*—In many diseases of the stomach, anæmia is a striking feature. In persons who pass their time breathing bad air, anæmia is frequent. Inquire, therefore, into the patient's diet, asking what she eats. Ask how much time she gets in the open air.

ii. *Increased waste.*—The causes of increased waste which lead to anæmia are hæmorrhage and albuminous discharges.

Chlorosis is a common cause of suppression of menstruation. It is a form of anæmia coming on without known cause. It is necessary to diagnose between chlorosis and (*a*) secondary anæmia, and (*b*) the serious forms of anæmia which are incurable. The diagnosis between chlorosis and secondary anæmia is made by inquiry into the previous history. If we find a distinct cause, such as hæmorrhage, want of food, or exhausting discharge, we do not call the anæmia chlorosis.

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What is chlorosis ?—Chlorosis is limited to the years after menstruation has begun, but before growth is complete. It is aggravated by all the conditions which favour the production of anæmia : deficient food, overwork, and want of sunlight. It is generally thought that it is due to a deficiency of blood formation, as if the blood-making organs had not kept pace with the development of the body. The characters of the blood are : (1) Pallor ; due to deficiency of red corpuscles, and still more to a deficiency of hæmoglobin in these corpuscles. (2) The blood is more watery than usual. (3) It is said to be deficient in albumen. (4) There is a greater variety in the size of the white corpuscles than in health.

Symptoms.—The face, the mucous membranes, and the nails look pale. The complexion is said to be greenish, hence the name of the disease. The tissues do not get enough oxygen, and the patients are short of breath. The want of oxygen in the tissues leads to deficient oxidation of fat, and hence these patients are usually fat ; and tissues which ought not to contain fat undergo fatty degeneration. Fatty degeneration of the heart leads to dilatation of its cavities. The nervous system suffers. The patients are either somnolent and dull, or they sleep badly and are irritable. There is muscular weakness, and the patients are readily fatigued. Neuralgic pains in the limbs are common. The blood, being more watery, is not detained so long in the capillaries, and hence the heart's action is quickened. The vessel walls are imperfectly nourished, serum more easily transudes through them, and there is œdema. The amenorrhœa is conservative and beneficial.

In every case of apparent chlorosis, bear in mind the possibility of commencing phthisis or of pleuritic effusion. Make certain also that there is no enlargement of spleen or of lymphatic glands. There are

certain auscultatory phenomena present in chlorosis :
(1) The *bruit-de-diable*, a continuing humming noise
heard over the jugular vein. (2) A hæmic murmur
heard with the cardiac systole over the junction of
the second left costal cartilage with the sternum.
A similar murmur may be heard over the heart's apex.
Appetite is bad. Food is badly digested, and there
is epigastric pain after eating. The urine is, as a
rule, copious and of low specific gravity. There is
constipation.

Treatment.—The treatment of chlorosis con-
sists in fresh air, light, food, iron, and laxatives.
All energy comes from the sun. Girls and plants
alike get white when cut off from sunlight. Tell the
patient to be in the open air as much as possible. The
condition of the heart, the shortness of breath, and the
state of the muscles make the patient unfit for exer-
tion. Prescribe therefore only as much exercise as
the patient can take without fatigue. Insist that
she be warmly clad. See that the diet contains
enough nitrogenous. food. These patients generally
dislike meat. Other things they will take without
medical commands. Let the patient drink plenty of
fluid, for thus elimination of waste matters is helped.

Iron must be given—the ammonio-citrate, the
sulphate, or reduced iron. A common and favourite
prescription is the following :—

> Ferri sulph., gr. ij. ;
> Acid. sulph. dil., ℥v. ;
> Mag. sulph., ʒj. ;
> Spt. chlorof., ℥xx. ;
> Aq. menth. pip., ʒj.

Under this treatment the patient gets well.

2. **Wasting diseases.**—Consider now a patient
who you can see is not anæmic, but has become
very thin.

I shall not describe the causes of wasting disease common to both sexes. There is one which is almost peculiar to women.

Anorexia nervosa means that the patient will not eat. Such patients waste extremely. The pulse and respiration are slow, and the temperature is often subnormal. Appetite diminishes, and even loathing for food may come on. When such patients die, no disease is found on *post-mortem* examination. If you suspect the nature of the case, inquiry into and observation of what the patient eats and drinks will reveal the cause of the wasting.

The treatment is (1) to take the patient from home ; (2) to feed her. Let her be waited upon by an attendant of strong will. Her instructions should be simply to insist on the patient taking food in small quantities at a time, at short intervals ; liquid food first, then ordinary diet.

Gastric ulcer.—There is another disease which occurs oftener in young women during the later years of growth than in any other patients, and which is often accompanied with amenorrhœa, viz., ulcer of stomach. The amenorrhœa is secondary to the wasting and anæmia which the stomach disease produces.

3. **Nervous diseases.**—The nervous diseases which can be perceived by inspection are imbecility, cretinism, etc., which delay the advent of menstruation, and melancholia, or other forms of insanity, which suspend it. Cases of slight melancholia supposed to be the effect of suppressed menstruation are not uncommon. You will recognise this condition by the patient's despondent aspect, her cold clammy hand, her pasty complexion, depressed spirits, want of appetite, constipation. She will probably be wasted, but beyond this there will be no physical sign of disease. The artificial production of bleeding from the uterus has no beneficial effect in this

condition. Exophthalmic goitre is usually apparent at a glance, yet there are cases in which the proptosis, or the thyroid enlargement, or both, are absent. If you have a case of amenorrhœa with rapid pulse and vague nervous symptoms, remember that this disease may be the cause.

Amenorrhœa with imperfect circulation.—There is another class of visible illness associated with amenorrhœa : girls in whom menstruation is late in coming on. Their features are puffy, lips and alæ nasi thick ; their hands are red and cold ; their feet are cold ; they complain of constant headache, of backache and lower abdominal pain, and of drowsiness, dulness, and languor. They are costive. It looks as if the blood found difficulty in getting through the capillaries, and stagnated in the tissues.

The best treatment is to give saline purgatives which cause a flow of serum from the blood into the bowel, and so make the blood more apt to take up the plasma which seems to be clogging the tissues.

Amenorrhœa with apparent good health.—Three things are possible :

1. The patient may be pregnant.
2. The menstrual blood may be retained.
3. The menstruating organ may be imperfect in development or have atrophied.

If she has previously menstruated regularly, is between twenty and forty, and healthy in appearance, pregnancy is probable. Women who have become pregnant while living in wedlock will comparatively seldom consult you about amenorrhœa. In those who are not married, the diagnosis is more often called for, is important, and sometimes difficult.

THE EVIDENCES OF PREGNANCY

Consider first the case of a woman who has seen nothing for five months or more. In the case of an

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unmarried woman a request to examine the abdomen may give offence. Therefore ask to examine the chest. In doing this you can see the breasts. It is in first pregnancies that the breast signs are the most trustworthy. What, then, are the changes in the breasts which denote pregnancy ?

The mammary signs of pregnancy.— 1. The increased size and vascularity of the breast, which feels knotty. 2. The greater width of the areola. 3. The darker colour of the areola. It is darker in brunettes than in blondes. It gets darker as pregnancy goes on. 4. The presence of the secondary areola ; light spots on the dark ground of the outer part of the areola. 5. The larger size of the nipple, the enlargement of the glandular follicles round it. 6. In the latter half of pregnancy, fluid can be squeezed out of the nipple. The fluid is at first opalescent ; towards the end of pregnancy it contains creamy droplets.

The differences are of degree only from the un-impregnated state. The most characteristic change is the secondary areola, the white spots on a dark ground.

Value of the mammary signs. — These breast signs never entirely disappear. A drop or two of fluid may be squeezed out of a breast many months after its owner has ceased to suckle. Hence the mammary signs are of no value in the diagnosis of any pregnancy except the first. They have no value unless well marked. But when you are consulted by a healthy-looking young woman, known to have never had a baby, whose belly is big, and the mammary changes of pregnancy are _well marked_, you need not be afraid to ask leave to examine the belly. If, on the other hand, you find the mammary changes not well marked, do not conclude that the patient cannot be pregnant. Suspend judgment until you have examined the abdomen.

If the patient be unmarried it is unwise to give an opinion before certainty is possible. If the amenorrhœa has lasted for more than four months the fœtal heart ought to be audible.

Abdominal signs of pregnancy.—Put the patient on her back and uncover her abdomen. If she be pregnant there will be a tumour, and the size of this tumour will correspond to the date of the amenorrhœa.

The rate of enlargement of the pregnant uterus
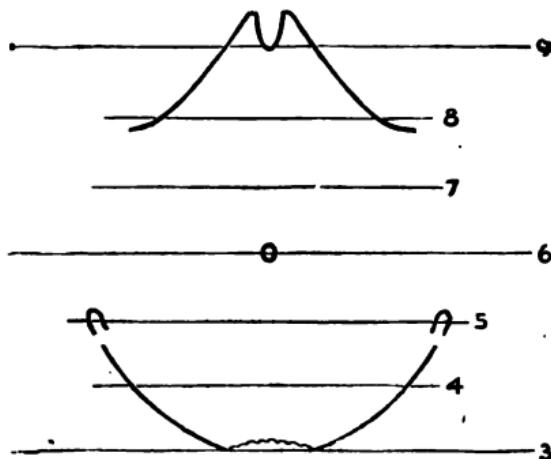
Fig. 130.—Diagram showing the minimum height of the fundus uteri at the different months of pregnancy.

is, roughly, the following :—At three months it reaches to the pelvic brim, at six months to the umbilicus, at nine months to the ensiform cartilage. If you divide the space between these landmarks into three, the lines will give you the intervening months (Fig. 130). These are easy to remember, and represent the minimum size which the uterus ought to reach at each month.

In the second·half of pregnancy the *fœtal heart* is audible.

The fœtal heart sounds.—The fœtal heart gives a succession of double sounds, not synchronous with the maternal pulse. Its rate is from 130 to 150 per minute. If, the mother being in good health, the fœtal heart is very slow or very quick, you may predict the sex of the child. If under 135 the child is probably a male, if over 145 probably a female.

The uterine souffle.—But the child may be dead. If so, you will not hear the fœtal heart ; but you will hear the *uterine souffle*. This is a blowing sound, synchronous with the maternal pulse. It is heard during the second half of pregnancy over the uterus, generally low down and at the side ; but not always in the same place. It varies in loudness ; it may be musical, and it may be felt as a thrill. It is certain that it has nothing to do with the placenta. It is heard when there is no placenta, and in pregnancy it continues to be heard after the placenta is expelled. It is not affected by position, or by pressure with the stethoscope, but it undergoes changes in loudness. These correspond with contractions of the uterus. The uterine contractions can be felt with the hand which supports the uterus opposite to the stethoscope. While the uterus is contracting the murmur gets louder. When the contraction has reached its height the murmur gets softer. As the uterus relaxes again the murmur gets louder, and when the relaxation is complete the murmur becomes softer. The murmur is produced, like cardiac murmurs, by the blood flowing out of small channels into larger ones. It is louder when the surroundings of the vessels are in process of change. The uterine contractions, by compressing the veins, help on the circulation, and so make the murmur louder.

A murmur rhythmically varying in loudness is heard only over a *uterine* tumour. It is heard over a uterus which contains a fibroid or a mole, as

well as over one which contains a fœtus. It therefore tells us that *the tumour is uterine*, nothing more.

A murmur may be caused by pressure. Such a murmur does not present rhythmical variations in loudness.

Diagnosis of pregnancy when child is dead.—The diagnosis between a uterus which contains a fibroid and one which contains a dead child is sometimes difficult. The uterus may contain both. The following points are the important ones :—

The shape.—In a uterus with fibroids there are rounded lumps and bosses, making the tumour irregular in shape. But a fibroid uterus may be as regular an ovoid as a pregnant uterus. If the outline of the child can be felt, the diagnosis is not difficult. But if the child be dead and decomposing, its parts will not be felt with the same ease. The liquor amnii may be deficient. In that case the fœtal head and limbs will not be movable inside the uterus, and the uterus will be moulded to the shape of the fœtus, so that it will not be of the regular ovoid shape that it has in a healthy pregnancy. For these reasons, in some cases we cannot tell from abdominal palpation whether a uterine tumour is a fibroid or a pregnant uterus.

Rhythmical uterine contractions.—During pregnancy the uterus is continually alternately contracting and relaxing. To feel this, keep the hand on the uterus from five to twenty minutes. The uterus, if relaxed at first, will be felt to become firm ; if firm at first, to become flaccid. The contractions generally occur every five or ten minutes, sometimes even twice in five minutes. The duration of each contraction is from two to five minutes. Contraction may last longer, or be almost continuous. When contracted the uterus is round, firm, solid, and the

outline of the fœtus cannot be felt. As the contraction passes off, the uterine wall becomes softer and its outline indistinct ; it may get so soft that its outline can scarcely be made out at all. The shape of the fœtus becomes more and more distinctly felt.

These contractions are not, in health, painful. They go on up to the time of labour, and whether the child be living or dead. They are useful : (1) the intermittent compression of the veins helps the circulation ; and (2) these contractions help to adapt the fœtus to the long axis of the uterus, and push its presenting part into the pelvic brim. The contractions continue after delivery, and are then known as " after-pains."

Similar contractions occur not only when the uterus contains a child, but when it contains a mole or a tumour.

No tumour is found in the belly, that alternately contracts and relaxes in the way described, except a uterus enlarged by something within it. Regular rhythmical contractions when present in a tumour prove that it is uterine. Their absence proves nothing.

Ballottement.—This means the sensations felt on pushing a solid body floating in liquid. There are two sensations : (1) when the solid body is pushed it moves away from the finger ; (2) after a second or two the solid body moves back and gently strikes the finger that pushed it. The latter is commonly called the " *choc-en-retour*," or " return shock."

How to obtain ballottement.—To get this sign not only must there be (1) a big enough fœtus, and (2) enough liquor amnii ; but (3) you must push where the fœtus is in contact with the uterus ; (4) you must push on a resistant part of the fœtus ; (5) you must support the uterus with the other hand at the point opposite to your push. There are

several ways of practising ballottement : (*a*) You
may put the patient on her back, and a hand on each
side of the abdomen. (*b*) Put the patient on her side,
with the abdomen hanging over the edge of the bed
or couch, and then with the hand applied underneath
push upwards, and note if you feel a solid body move
away and then fall back. This is the best method
for ordinary purposes. (*c*) Support the patient with
pillows in a half-reclining position, so that her uterus
may be vertical and her abdominal muscles relaxed.
Then with two fingers in the vagina press up the pre-
senting part of the fœtus. This method is the best
for obtaining the sign, because the fœtal head is the
part usually pressed on ; but it is disagreeable to the
patient, and not applicable if the fœtus is lying
transversely.

I have found ballottement valuable when difficulty
in diagnosis was caused by a tumour above the preg-
nant uterus pressing it down and so interfering with
the recognition of the abdominal signs of pregnancy.
The absence of ballottement proves nothing.

Softening of the cervix.—During pregnancy
the cervix gets blue and gets soft. This softening
increases as pregnancy goes on. The consistence of
the unimpregnated cervix uteri is that of the tip of
the nose ; that of the pregnant cervix is that of the
lip. When pregnancy is advanced this softening is
a most valuable sign. It does not occur with fibroids.
The cervix and vagina become deep bluish purple.
This change of colour is not produced by fibroids.

Amenorrhœa.—The first symptom of pregnancy
is amenorrhœa. It is this from which the patient
dates the pregnancy. It is a closer guide to the
probable date of delivery than examination of the
belly alone. But when you have to give an opinion
as to whether the patient is pregnant or not, do not
let the menstrual history influence you in the least.

Morning sickness.—This symptom is present in about two-thirds of pregnant women.* When present it usually begins in the second month. It is the symptom by which a patient usually judges whether she has missed a menstruation because she is pregnant or from some other cause.

The diagnosis of early pregnancy.—In the first half of pregnancy you can distinguish the enlargement due to pregnancy from that due to subinvolution, or to a fibroid, by the growth of the uterine enlargement at the regular rate of growth of pregnancy. A uterus the subject of subinvolution does not grow at all, and it is infinitely rare to meet with a fibroid growing with the rapidity of a pregnant uterus.

Causes of temporary amenorrhœa.—In young women slight causes, such as change of residence or mode of life, or slight illness, or lowering of health of any kind, may suspend menstruation for a few months.

The patient may have amenorrhœa because the menstruating organ has atrophied. Atrophy of the uterus injures not the patient's health. It sometimes follows childbed, and is then known as puerperal atrophy of the uterus, or superinvolution. Sometimes it is induced by removal of the ovaries to cure disease.

Cause of the climacteric.—The cessation of menstruation is due to the cessation of ovarian function. The function of the ovaries is twofold : (1) to produce ova, (2) to produce secretion. Sometimes this secretion seems to be in excess, and then produces softening of the bones and copious excretion of phosphates in the urine—conditions which form the disease known as osteomalacia, which is cured by removing the ovaries.

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* *See* Giles, *Obst. Trans.*, 1893.

Menstruation during the climacteric.—
This naturally occurs between the ages of forty-five
and fifty. The cessation of menstruation is sudden
in about one in seven women. It is usual for one
or more menstruations not to come on, and then
for menstruation occasionally to return at irregular
intervals. The length of this "dodging time" is, on
the average, two years and a quarter, the variations
ranging from no dodging time at all to ten or twelve
years.

Symptoms accompanying the climacteric.
—During the cessation of menstruation, and for some
time after it, certain symptoms are common. Among
these are *flushings*. These are increased by emotion
and by heat. They chiefly affect the face and head,
but may also be felt in the limbs. They are present
in more than half of women at the menopause. The
flushing is often preceded by *chilliness*, and followed
by *sweating*.

Obesity and emaciation.—About the age at
which the climacteric occurs, women generally get
either fatter or thinner than they were in earlier
years.

Atrophy of genital organs.—After men-
struation has ceased the uterus becomes small, the
vagina smooth, and its orifice, if it has not been
enlarged by childbearing, shrinks.

Nervous disease and the climacteric.—
The strain involved in reproduction renders child-
bearing women especially liable to insanity. Depres-
sion of spirits, hypochondriasis, and headaches are
more common at the menopause than in the years
before and after.

Treatment.—In a woman at the climacteric,
whose history or symptoms arouse apprehension of
coming insanity, direct your treatment to making
her eat well and sleep soundly and long.

In the treatment of the minor troubles incident to the menopause, the first thing is to assure the patient that these things are natural, and will cease after a few years; that they are one of the trials of her sex that every woman has to pass through. Ovarian extract has not as yet been used enough to be properly appraised. Thymol, in pill containing gr. ij. thrice daily, has been found useful at the London Hospital. If the symptoms occur when the patient should have menstruated, are accompanied with pelvic uneasiness, and the patient has a good colour, relief will follow replacement of the absent menstruation by four or six leeches to the cervix, or, if the patient be a virgin, to the groin.

Premature climacteric.—Cessation of menstruation at an age earlier than is normal may be brought about either by shock, mental or physical, or by severe illness, either febrile or wasting. Its most common cause at the present time is the removal of the ovaries by operation. When the ovaries have been removed, menstruation stops. In about two-thirds of the cases it stops at once; and in the rest after a few months.

Menstrual molimina.—The symptoms associated with the stoppage of menstruation are of two kinds: (1) those occurring at the time when the patient would have menstruated, had her ovaries been left; (2) those in the interval.

(1) Pain, when menstruation should have come on, persists in about half. Other rarer troubles are swelling of varicose veins, pains in the breasts, headache, vomiting, flatulent pain, fainting fits, noises in the ears, skin eruptions, etc. After the first few months following operation they gradually lessen and cease.

(2) The symptoms which occur in the interval are like those of the normal menopause. Sudden feelings

of heat, often with visible *flushing*, are the commonest symptom. Attacks of *sweating* occur in about a third of the cases. *Giddiness* is complained of in about a fifth of such cases. *Palpitation* and *headache* are less common.

Effect on the genital organs.—The first effect is hyperæmia. There is often hæmorrhage from the uterus. The vagina becomes injected, softened, and swollen, as in pregnancy. The hæmorrhage lasts a few days or weeks; the hyperæmia of the vagina for two or three months. Then the vagina begins to atrophy; its folds are obliterated, and it gets shorter and narrower. The uterus atrophies; its vaginal portion becomes shorter and smaller, the cervical canal narrower. Diminution in the size of the uterus is marked at the end of three months.

Effect on the general condition.—About two-thirds of women who have had their ovaries removed get fat. Insanity has followed, but I know of no evidence that it follows oöphorectomy with such special frequency that it can be considered an effect of this particular operation. In most cases sexual feeling is first lessened, and then annulled; but this change is gradual and comes on slowly. In nulliparæ the atrophy of the vagina may so contract its orifice as mechanically to hinder coition.

SUPERINVOLUTION OF THE UTERUS

The term " superinvolution " was introduced by Sir James Simpson, but the disease had been described before him under a name by which it is known in Germany, viz., " puerperal atrophy of the uterus."

Morbid anatomy.—Excentric atrophy means that the cavity of the uterus retains its natural dimensions, but that the wall of the organ is thinned so that its external measurements are smaller. Con-

centric atrophy means that the length and breadth of the uterine cavity are diminished as well as its wall wasted. It is reasonably believed that excentric atrophy is an early stage of concentric atrophy ; that some excentric atrophy takes place naturally during lactation ; and that after weaning the uterus returns to its normal thickness. In superinvolution this normal atrophy of lactation goes on to a higher degree and is permanent. The mucous membrane of the uterus is either absent or very thin ; its muscular tissue is thinned, the fibres are closely packed, and it displays among its fibres thrombosed and obliterated vessels.

Etiology.—Certain puerperal diseases have been observed to be followed by atrophy of the uterus. These are : (*a*) wasting and anæmia ; (*b*) suppuration of the ovaries ; (*c*) pelvic cellulitis ; (*d*) sloughing of the inner part of the uterine wall, the so-called *endometritis dissecans.* There are also diseases which may lead to atrophy of the uterus apart from the puerperal state. Among these are phthisis, diabetes, Addison's disease, Graves's disease, myxœdema, insanity, emotional shock, paraplegia. Superinvolution sometimes occurs in women in whom none of the causes assigned for it have been present, and in whom examination reveals no other disorder than that the uterus has undergone atrophy.

Symptoms.—The only invariable symptom is amenorrhœa. Sterility is probably the consequence. Superinvolution probably depends on ovarian atrophy. Changes and symptoms usual at the climacteric gradually supervene. The breasts waste. The patients complain of the chills, flushes, and sweats which usually trouble women at the menopause. The only other symptoms that I have seen associated with superinvolution are frequent headaches and leucorrhœa.

Diagnosis of superinvolution of the uterus.—The diagnosis is made by finding out by physical examination the smallness of the uterus. This is done in three ways: (1) By passing the sound. (2) Bimanual examination. If this cannot be done, either from nervousness of the patient, or because she is very fat, then (3) seize the cervix with a hook or volsella and pull it down. Insert a finger into the rectum, and you can feel the posterior surface of the uterus.

Treatment of superinvolution.—The treatment is the cure of any condition of ill-health which may be the cause of the uterine atrophy. If the patient be florid, and the time at which menstruation should occur is marked by uncomfortable sensations, these symptoms may be relieved, and the uterus stimulated, by the application of leeches to the cervix uteri.

CHAPTER XLII

AMENORRHŒA—MENSES RETAINED

You may find a tumour rising out of the pelvis in a patient who has never menstruated. This tumour may be due to retention of menses.

Symptoms of menstrual retention.—The symptoms are : (1) *pain* recurring once a month, and each month increasing in severity ; (2) an increasing *swelling* in the lower abdomen. But even with menstrual retention of long duration there may be no pain, and the pain usually present is not severe. The swelling can be felt by putting the hand on the abdomen. Its size depends on the amount of blood retained.

Abdominal signs.—Put the patient on her back ; bid her draw her knees up. Place your hands on the lower abdomen. You will either feel a distinct swelling rising out of the pelvis, or you will be able to press your fingers deep down into the pelvic cavity. If there is no history of monthly pain and no abdominal swelling, it will be clear that there is no considerable quantity of menstrual fluid retained, and therefore no need for immediate further investigation. The abdominal tumour produced by retained menses (Fig. 131) is usually formed by the dilated vagina and cervix uteri, while the body of the uterus is felt like a knob on the top of the tumour. If you find a tumour rising out of the pelvis, you must examine by the vagina.

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Vaginal signs.—The most common atresia is closure of the vagina by a transverse septum at the lower part of the vagina. In retention of menses by such a septum, the finger, when inserted between the
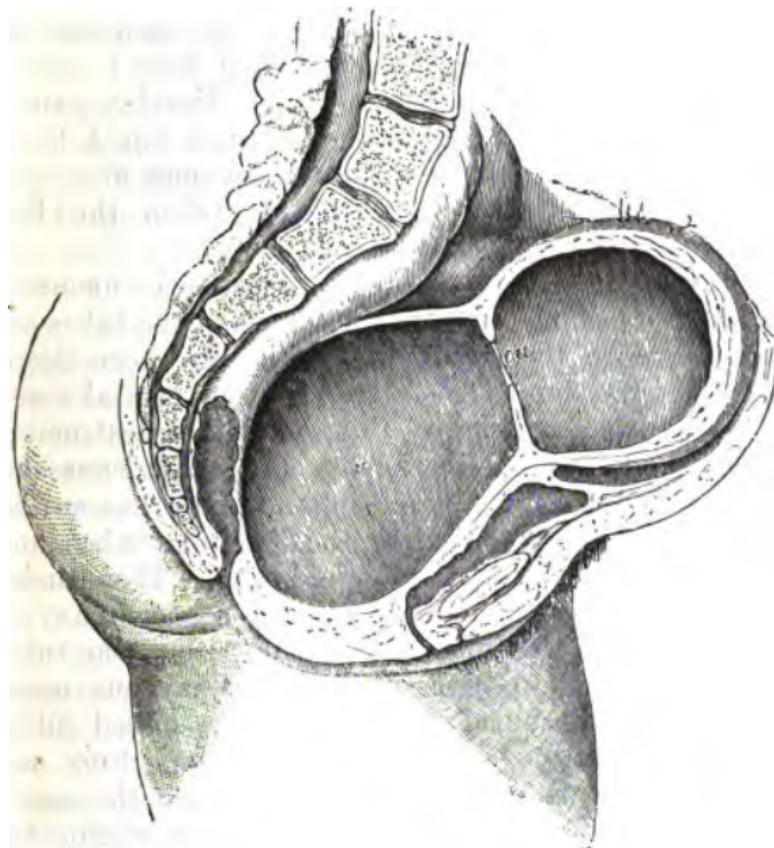
Fig. 131.—Hæmatometra and hæmatocolpos. (*After R. Barnes, from a specimen in Radcliffe Museum, Oxford.*)

ou, Os uteri ; *r*, vagina.

labia, feels a tense, bulging, elastic swelling, which on inspection is seen to be bluish in colour.

The vagina may be closed throughout the whole or part of its extent by connective tissue between urethra and rectum. The walls may be fused together by

a hard cicatrix, as a result of the sloughing which sometimes occurs in the course of febrile disease in childhood. If the closure be high up, the accumulation of fluid takes place *in the uterus*. The more this organ is distended, the more nearly it approaches the spherical in shape. It occupies the upper part of the pelvic cavity and, if there be much retained fluid, rises above the brim. Monthly pain is seldom absent. Owing to the retained blood being under pressure, part of its water becomes absorbed, and it becomes thick like treacle. Often the Fallopian tubes are filled with blood.

Why the tubes contain blood.—In hæmatosalpinx associated with retained menses the tubes are not healthy ; their abdominal ostia have been closed by inflammation. The atresia of the genital canal has been due to inflammation, leading to destruction of epithelium and adhesion of opposed mucous surfaces ; and then the same inflammation has spread up to the uterus and along the Fallopian tubes, and led to closure of their abdominal ostia. Then, under the influence of the pelvic congestion accompanying menstruation, bleeding has taken place into the tubes (probably from disease of the tubal mucous membrane), and the blood is pent up in the closed tubes.

Diagnosis.—The history of amenorrhœa and the recurring monthly pain suggests what the condition is. If the blood be retained in the vagina the bulging membrane can scarcely be taken for anything else. In atresia high up, leading to distension of the uterus, we have : (1) the situation of the tumour, which is that of the uterus, together with the fact that the vagina is not patent ; (2) the age of the patient, which is that at which uterine new growths are hardly ever found ; (3) the fact that the tumour cannot be pushed up, as an ovarian tumour of similar size could be.

Treatment.—The treatment of retention of menses consists in letting out the retained blood, and, if possible, keeping open a passage through which the menstrual flow may escape.

1. **Retention from a transverse septum in the vagina.**—Anæsthetise the patient. Put her in the lithotomy position, and secure her in that position with Clover's crutch.

The safest way to cut through a septum in the vagina bulged down by blood under tension is with the Paquelin cautery knife. The high temperature of the knife kills any germs in contact with it. If you have not got this apparatus, take a clean scalpel. Then make a large incision through the septum in the middle line. Receive the fluid first in a bowl, then, as the flow gets less abundant, apply a thick pad of sterilised absorbent wool. The cardinal points in the operative treatment of retention of menses are (1) no squeezing, and (2) prevention of septic infection.

Mere closure of the vagina by a septum when once opened gives no subsequent trouble.

2. **Hæmatometra.** — If the vagina is not pervious, the retained blood will distend the uterus, and may distend the Fallopian tubes. Distension of the uterus with blood is called hæmatometra (*see* Fig. 131). If the uterus only is distended, by dissecting between the urethra and vagina a canal sufficient for menstruation can be produced. It will probably become so narrowed as to be unfit for complete sexual intercourse ; and in the event of pregnancy occurring, Cæsarian section will be required for delivery. At the time that this operation is done the patient can be sterilised, and thus further pregnancies avoided. She may think this risk a price worth paying for a living child, and therefore it is right to give her the option of incurring it. A vagina defective at one place may sometimes be widened by

transplanting a flap of skin in the way I shall describe when speaking of vesico-vaginal fistula.

3. Hæmatometra with hæmatosalpinx.— If the tumour is not a globular swelling, but a tripartite one, there being a central swelling with smaller lobes on each side, it is probable that the tubes are distended as well as the uterus. When the tubes are dilated the liberation of retained blood from the uterus is often followed by rupture of the tubes and escape of the blood, and possibly pus, into the peritoneum. This quickly sets up fatal peritonitis. Rupture of a tube is likely to happen if the tubes are softened by inflammation, distended, and adherent to neighbouring parts. When the fluid is retained in the vagina and not in the uterus, and the tubes are not dilated, this danger is not present. Hence operations for retention of menses in the uterus are more dangerous than for retention by a septum low down in the vagina. Even if the danger from dilated tubes were slight, they are probably functionally useless. Therefore, if there is ground for thinking that the tubes are dilated as well as the uterus, the best treatment is to open the abdomen and remove the diseased uterus and tubes without opening them. I shall describe how to do this in Chapter LVIII.

Late atresia.—Atresia may occur in a patient who has previously been regular. Cicatrisation after ulceration or cauterisation, blocking of the cervical canal by a tumour, either a fibroid or a malignant growth, may effect this ; but its most common cause at the present day is cicatrisation after amputation of the cervix uteri. The atresia is preceded by stenosis, and the stenosis causes obstructive dysmenorrhœa. The history at once puts you on the right track. You examine, and discover, instead of an os uteri with a healthy margin, a puckered

scar, in which you find no opening. The uterus, instead of being of its natural flattened pear shape, is nearly spherical.

The treatment of these cases is simple. Put in a duck-bill speculum. Fix the cervix with a hook or volsella. Put a sharp knife into the scar that represents the os, and incise it freely. When the fluid has ceased to run, put in a glass or vulcanite stem, and let the patient keep in bed for three weeks.

CHAPTER XLIII

AMENORRHŒA—MENSTRUATION ABSENT

Causes of absence of menstruation. — The patient may be well-grown, florid, muscular, fat, in perfect health, and yet not menstruate. Imperfect development of the ovaries implies imperfect development of the uterus; but deficient development of the uterus does not imply defect of the ovaries. Such patients are perfectly well, and the only reason for examining them is to relieve the natural anxiety of the patient and her friends.

DEVELOPMENTAL DEFECTS WHICH MAY CAUSE AMENORRHŒA

1. **The ovaries.**—Complete absence of the ovaries produces amenorrhœa; but absence of one ovary, however brought about, is not enough to do so, nor does it entail sterility.

Imperfect development of the ovaries is seldom, if ever, on one side only. The ovary is like that of a fœtus, small, solid, with no follicles visible to the naked eye. The sexual functions are in abeyance. The uterus is imperfectly developed, menstruation absent, conception impossible. The diagnosis of imperfect development of the ovaries is practically impossible.

2. **The uterus.**—Imperfect development of the uterus is more easily ascertained than the corresponding condition of the ovary. Development may be imperfect in several ways.

There are two classes of uterine malformations :

a. Those due to defect in the growth of the uterus.

b. Those due to imperfect union of its lateral halves.

The order of development.—During the first eight weeks the ducts of Müller are still separate. At the end of the twelfth week the septum ought to have been absorbed. By the end of the twentieth week the horned shape of the uterus ought to have disappeared. By birth the vagina ought to be in folds, and the uterus well rounded.

A. The deformities produced by influences acting in the first half of pregnancy are—

(i.) Absence of uterus.

(ii.) Rudimentary uterus.

(iii.) Absence or deficiency of one half.

(iv.) Want of union of the lateral halves, which, according to its degree, may result in either (1) a completely double uterine cavity, the two halves being —(*a*) Quite separate—uterus didelphys. (*b*) To external appearance united, divided only above—uterus bicornis. (*c*) Of normal external appearance, but divided by a septum—uterus septus. Or (2) (*d*), an incompletely divided uterine cavity, the uterus being either horned (*a*), uterus bicornis or arcuatus, or not (*β*), uterus subseptus.

B. Influences acting in the second half of pregnancy only produce the fœtal or infantile uterus.

A. (i.) **Absence or** (ii.) **rudimentary condition of uterus.**—The uterus may be absent, or its situation only indicated by some **V**-shaped bundles of muscular and connective tissue. Such extreme want of development as this is very rare, except in monsters, where it co-exists with other defects. To distinguish a rudimentary uterus from a tube or ovary the round ligament is the guide ; it marks the outer end of the uterine structure.

With an imperfectly developed uterus, ovaries may be present or not. If present, they may be well developed and produce ova. Fallopian tubes may or may not be present. When present, their lumen at the uterine end is usually obliterated. In all cases of absent or rudimentary uterus the vagina is either absent or ends in a *cul-de-sac*. The external genitals may be normal. The body may be well grown and present all the feminine characters. Menstruation is absent.

The next degree of development is that in which the uterus is only represented by a fibrous nodule without a cavity, from which run outwards fibrous cords.

The most common form of rudimentary uterus is the *uterus bipartitus*. This is a rudimentary body of uterus ending below in a blind vaginal *cul-de-sac*, into the top of which the fibro-muscular bundles are inserted. Above it ends on each side in a fibro-muscular band, which sometimes contains a small cavity. The vagina is usually short or deficient.

(iii.) **Malformations in which one half the uterus only is developed—uterus unicornis.—** Fallopian tube, ligament of ovary, and round ligament spring from the developed half. The body of the uterus is smaller than that of a properly developed uterus, so that the neck is longer and thicker than the body. The wall becomes thinner as the Fallopian tube is approached. On the opposite side the half-uterus is either absent or undeveloped. The undeveloped half-uterus may contain a cavity. There is generally no other malformation. Pregnancy in a unicorned uterus cannot be diagnosed from pregnancy in a normal uterus ; nor pregnancy in a rudimentary horn from tubal pregnancy.

Uterus didelphys. (Fig. 133.)—In this form both uteri are entirely separate, sometimes viscera
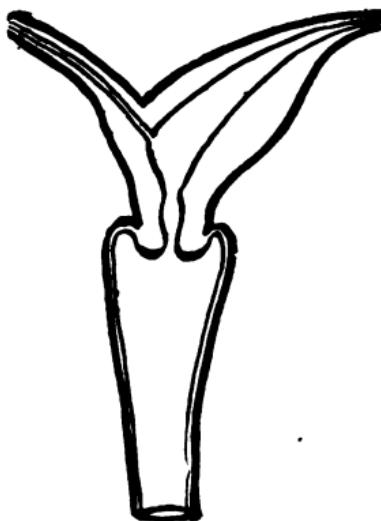
Fig. 132.—Diagram illustrating uterus bicornis with imperfect development of one half. (*Giles.*)
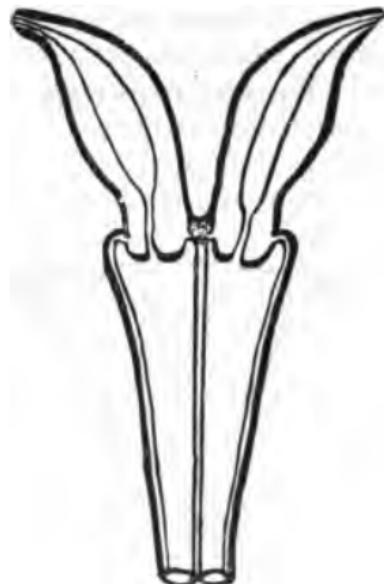
Fig. 133.—Diagram illustrating uterus didelphys. (*Giles.*)
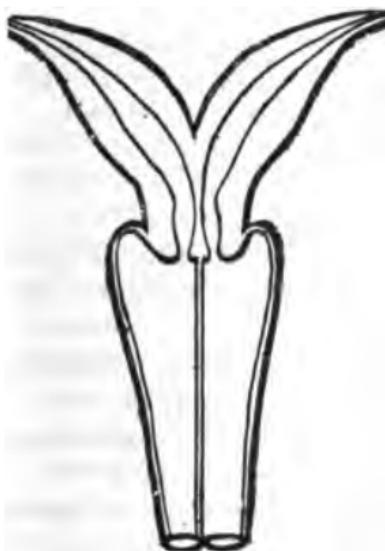
Fig. 134.—Diagram illustrating uterus bicornis duplex. (*Giles.*)

Fig. 135.—Diagram illustrating uterus bicornis semiduplex. (*Giles.*)

lying between them. This is always combined with other malformations.

Uterus bicornis duplex. (Fig. 134.)—There are two chief forms, according to whether the two uteri are united only at and below the internal os, or whether the union extends above it.

Fig. 137.—Diagram illustrating uterus subseptus. (*Giles.*)

Fig. 136.—Diagram illustrating uterus bilocularis or septus. (*Giles.*)

Uterus bicornis semiduplex (Fig. 135) is when the two horns join at the os internum. The horns may be unequally developed.

Uterus arcuatus.—There is merely a vertical depression in the middle of the fundus uteri.

With uterus bicornis of any kind the vagina may be single or double.

Uterus septus or bilocularis is a uterus that externally shows no sign of division, but is internally divided by a septum into halves (Fig. 136). **Uterus subseptus** is when this septum is incom-

plete ; it may be present in the cervix only, or start from the fundus and not reach all the way (Fig. 137).

Menstruation in a double uterus is as perfect as in a normal uterus. In a completely double uterus, sometimes only one uterus bleeds, sometimes both.

B. Malformations determined in later fœtal life, or in childhood.—Uterus fœtalis or infantilis.—This is the commonest developmental defect. The uterus of a grown woman resembles in size, shape, thickness of wall, and the relation between the length of the cervix and that of the body, that of a fœtus of six months' intrauterine age, or that of a child under fourteen. The body is small in proportion to the cervix. Sometimes patients are full-grown, sometimes cretinoid. In some cases the uterus is longer, and may be of normal length, but the wall of the body is thin. In another form the whole uterus is in all its parts proportionately small. Virchow has called this " *primary atrophy*." Yet another form is called **uterus parvicollis or acollis,** in which the vaginal portion is small, although the body is normal.

Treatment.—Explain that the womb has not grown to its full size, that it is not necessary the patient should menstruate, and that she had better be content with her condition. The uterus may yet develop.

Two things may give an adventitious importance to amenorrhœa from defective development : (1) the occurrence of menstrual molimina, or of so-called vicarious menstruation ; (2) the patient may wish to marry.

Menstrual molimina.—This term denotes the symptoms which accompany menstruation. Ovulation may produce monthly recurring pain ; and ovulation may take place when the uterus is absent or badly developed.

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Emmenagogue treatment.—I advise against any attempt to make an imperfectly developed uterus menstruate, for the following reasons : First, amenorrhœa does no harm. Second, there is no medical treatment that will produce menstruation.

Vicarious menstruation.—This term means that a flow of blood from some other part replaces that which ought to have come from the uterus. No accurate observer has seen this. Cases recorded as such fall into three groups : (1) Cases in which the only evidence is a vague statement from a patient. (2) Cases in which patients lose blood from some diseased part—and in consequence become anæmic and do not menstruate. (3) Cases in which the general vascular tension which precedes menstruation causes hæmorrhage from other parts besides the uterus.

Amenorrhœa and marriage. — When a young woman has never menstruated she ought not to be married without medical advice, for defective development may unfit her for marriage. Give no opinion in such cases without local examination. It is possible for a woman with an imperfectly developed uterus to become pregnant. When this has happened, the uterus goes back to its former small dimensions after delivery. If you find the vagina absent and the uterus rudimentary, the patient cannot have children, nor can she have natural sexual intercourse. Explain to the persons who ask your advice as to marriage the physical consequences of such marriage. If the persons concerned choose to accept those consequences—as they sometimes do—that is their business.

Hermaphroditism.—There are developmental defects which make the patient's sex doubtful. The subjects of such malformations are often called hermaphrodites. In its literal sense the word "hermaphrodite" means an individual who

possesses perfect male and female sexual organs. No such thing exists in the human species. The excretory ducts may be imperfectly formed, so that the sexual characters are not distinct. Cases in which the external parts have some features common to both sexes are called pseudo-hermaphrodites.

Pseudo-hermaphroditism.—This means that the excretory ducts of both sexes are present, wholly or in part. Hence the subject appears to possess the organs of both sexes. The commonest is the male external pseudo-hermaphrodite. The subject of this has testicles, though they may be undescended. The scrotum is so deeply furrowed in the middle line as to look like labia, and the penis is hypospadiac—that is, the urethra opens on its under surface, near its root. The penis is often small and the breasts large. The commonest form of female pseudo-hermaphroditism is that produced by the combination of adhesion of the labia, large size of the clitoris, and labial ovarian herniæ. Pseudo-hermaphrodites are generally sterile, for the organs which resemble those of the opposite sex are generally badly developed.

What advice to give.—If you are in doubt as to the sex of an infant, and are pressed for an opinion, advise that it be brought up as a boy.

PART IX.—DISORDERS OF THE SEXUAL FUNCTIONS

CHAPTER XLIV

SEXUAL TROUBLES

DYSPAREUNIA

DYSPAREUNIA signifies difficulty or pain in sexual intercourse.

Difficulty without pain.—You may be told that intercourse cannot be accomplished ; but that attempts at its performance do not much hurt the patient. Such a report points either to a malformation, so that the vagina is closed or absent, though not tender, or (which is commoner) to defective power in the male.

Pain without difficulty. — This is present with most pelvic inflammations, with prolapse and tenderness of the ovary, in some cases of retroflexion, in chronic metritis. The cause of the tenderness can only be found out by examination.

Pain and difficulty.—In most cases of dyspareunia there are both pain and difficulty. Such cases fall into three groups :

      1. Smallness of the vaginal orifice.
      2. Vaginismus.
      3. Disease of the vulva.

1. **Smallness of the vaginal orifice.**—In most virgins the first intercourse is difficult, painful, and causes bleeding. If the vaginal orifice is smaller

than usual, this difficulty may not be surmounted. You find that beyond the smallness of the vaginal orifice there is no disease, and that the mucous membrane can be touched anywhere without causing pain. The treatment of such cases is to enlarge the orifice.

Methods of enlarging the vaginal orifice. —(1) **By gradual dilatation.**—This may be done if the patient objects to anæsthesia. Pass Hegar's dilators from the smaller sizes to the largest.

(2) **Rapid dilatation.**—Anæsthetise the patient and put her in the lithotomy position. Put your fingers and thumb together into the form of a cone. Anoint them with glycerine of corrosive sublimate, 1 in 2,000. Gradually press them into the vagina, until the metacarpo-phalangeal joints of the fingers can pass the vaginal orifice. This will tear the hymen, the vaginal orifice and the vagina. The objection to it is, that there is no precision in the vaginal tearing.

(3) **By cutting.**—By this method the vaginal orifice is enlarged with precision and certainty ; and no other part is injured. The patient being anæsthetised and in the lithotomy position, cut with a scalpel on each side downwards and outwards through the vaginal orifice. When the sides of the cut are pulled apart, the raw surface becomes rhomboidal. Unite with catgut stitches the upper sides of the rhomboid to the lower. In this way you will remove the obstacle with certainty, and do no damage to the pelvic floor.

2. **Vaginismus** is a nervous disease marked by two features : (1) extreme sensitiveness of the mucous membrane of the vulva, and (2) spasmodic contraction of the levator ani muscle. When sexual intercourse is attempted, (*a*) intolerable pain is produced, and (*b*) the levator ani contracts so as practically to close the vagina.

Associated conditions.—Vaginismus is fre-quently associated with painful menstruation, and often the rectum is over-sensitive as well as the vagina, so that the patient cannot bear the adminis-tration of an enema. The spasmodic contraction of the levator ani is painful.

Clinical course.—Vaginismus is not found out till the patient is married. (1) The usual result of vaginismus is that marriage is not consummated, and sterility and conjugal unhappiness are the result. (2) In some cases in which it is associated with dys-menorrhœa, dilatation of the cervix will cause men-strual pain to cease, sexual desire to develop, and vaginismus to disappear. (3) Although vaginismus usually causes sterility, it does not always do so. (4) If pregnancy take place and go to term, the patient is not cured by childbirth. It is liable to " spontane-ous " variations (that is, to variations the cause of which we do not know), and may even disappear. (5) Vaginismus may develop suddenly. (6) Pierre Marie* describes " vulvo-vaginal crises," which con-sist in painful spasms of the levator ani, as an early symptom of tabes dorsalis.

Diagnosis.—Vaginismus has to be distinguished from (1) mere smallness of the vagina in a nervous patient. The latter condition differs from vaginismus in that if the finger is gently inserted into the vagina there is neither pain nor spasm of the levator ani. In vaginismus, even touching the mucous membrane provokes signs of pain and spasm. (2) Vaginismus has also to be distinguished from local diseases producing tenderness. Such disease will be discovered by in-spection of the part.

Treatment. — Vaginismus is in some cases incurable. Intercourse may be made possible by the insertion into the vagina, five or ten minutes before-

* "Diseases of Spinal Cord," N.S.S. Trans., p. 290.

hand, of a pessary containing 2 gr. of eucaine β in ʒij. of glycerine mass. There is difficulty in diagnosis between the sensitiveness of a timid patient and genuine vaginismus. In my experience most cases that seemed to be vaginismus have proved of the former kind, and have been cured by enlarging the vaginal orifice by the operation described on page 389. If there be dysmenorrhœa, dilate the cervical canal at the same time, and divide the vaginal portion.

3. **Disease of the vulva.**—The conditions which often attract attention by the dyspareunia which they cause are urethral caruncle, congestion and inflammation of the urethra, kraurosis of the vulva, chancres, painful vaginitis, fissures about the fourchette, follicular vulvitis. The diagnosis is made by examination.

Kraurosis vulvæ (κραυρόω, I make dry, harden).—This is a rare disease, attended with tenderness of the vulva and contraction of the vaginal orifice, and therefore with dyspareunia.

There is atrophic shrinking of the skin and mucous membrane of the external genitals. The parts are dry, hard, white and glistening, and extremely tender. They have lost elasticity, so that the introduction even of a finger causes fissuring. The microscope shows atrophy of papillæ in the upper layer of the corium.

Vascular degeneration of vulva. — There is another condition which affects women usually towards the end of the childbearing period. Dyspareunia is the first symptom. There are spots of discoloration, from a pale brick-red or brown to deep purple, which when touched are very tender. They are on the inner surface of the nymphæ, just outside the vaginal orifice.

The two conditions—(*a*) the tender red spots,

and (*b*) the contraction and hardening of the vulva—
are essentially different, though they may sometimes
co-exist.

Symptoms.—The chief symptom of kraurosis
vulvæ has been styled "*climacteric dyspareunia.*"
When a woman complains that, although she is
otherwise in good health, sexual intercourse has become
painful and difficult, this is probably the disease
present. Kraurosis is often accompanied with leu-
corrhœa, and generally with burning pain, smarting,
and itching of the parts.

Etiology and prognosis.—It occurs chiefly
in elderly women, alike in the sterile, the parous, and
in widows, but I have seen it in women under thirty.
The smarting and itching can be removed, and the
patient made comfortable so long as she avoids sexual
intercourse. In young women the painful red spots
may get well or be cured without either tenderness
or contraction remaining. I have seen atrophy and
painful red spots follow double oöphorectomy in a
young woman. Kraurosis. vulvæ has been ascribed
to syphilis and to gonorrhœa. These diseases are
common, and kraurosis is rare.

Treatment.—If there be vaginitis, order a
douche. If the part be sore, a saturated solution
of borax will be best. The best way of treating the
vulva is by applying remedies in powder. Tell the
patient, after using the douche, to hold the labia
apart, and with an insufflator puff on the powder so
as to dust the whole surface. The powder which I
have found most useful is dermatol. The douche
should be used twice a day, and the powder as often
as the disagreeable sensations which it relieves arise.

When contraction and hardening of the vulva is
the morbid change, and it is important that married
life should be possible, an operation should be done
like that described at p. 389, for enlarging the vaginal

orifice.   I have treated cases by excision of the tender red spots with success.

ANOMALIES OF SEXUAL FEELING

Anomalies of sexual feeling are probably commoner in women than in men.

Absence of sexual feeling.—It is certain that complete absence of sexual desire and enjoyment may exist in a woman who is in perfect health. Such lack of sexual feeling does not prevent fertility. It is probably present in many happy mothers of families who never mention it to anyone. On the other hand, I have known it to produce conjugal unhappiness ending in separation. Sexual feeling may continue to be absent throughout life, or it may suddenly develop late in the childbearing years.   In some hysterical women the vagina is anæsthetic.

Removable causes.—Any local disease which makes intercourse painful will probably also prevent desire and enjoyment, which may be restored when the disease is cured. The most marked example of this is spasmodic dysmenorrhœa, of which I have spoken at p. 347.

Sexual feeling in excess.—This is manifested by erotic dreams, and the production of sexual orgasm by causes which ought not to have this effect. Such irritability may be a trouble to the patient, and therefore deserves the term "excess." (*a*) When women whose sexual feeling is strong suddenly discontinue marital intercourse, as from widowhood or separation, the tension of the sexual centre finds natural relief in erotic dreams accompanied by orgasm. If consulted about such things, remove any fears the patient may have by telling her that such feelings are natural. (*b*) There are women in whom the friction caused by working a pedal sewing-machine or riding

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a bicycle will provoke the sexual orgasm. Increased reflex irritability is an effect of anæmia and of nervous exhaustion from any cause. When complaint is made of trouble of the kind under consideration, the treatment consists in (1) avoidance of the cause which provokes sexual feeling ; (2) the treatment of anæmia by hæmatinics, and of nervous exhaustion by the procuring of sleep, and outdoor life ; (3) occupation, and "change" if practicable.

Sexual symptoms of nervous disease.—Increased sexual irritability may be the result of disease of the nervous centres. The occurrence of " clitoridean crises," *i.e.* sexual orgasm, often several times a day, is sometimes an early symptom of tabes dorsalis. I have known unsolicited garrulity about sexual sensations to be the first symptom of insanity. Remember this when consulted about such things.

SEXUAL ABUSES

Masturbation in the female.—Masturbation is not common in female children. It is not limited to the years just preceding puberty, but occurs quite as often in children of three or four. The first noticeable effects of the practice are bad temper and stubbornness. Then the child becomes shy, seeks solitude, often spends a long time in the water-closet, has a downcast and drawn look about the eyes, is listless and " below par," and sleeps very lightly. There are no pronounced local effects, except occasionally excoriation of the vulva. If the child is asked about it by someone in whom she has confidence, she will admit it. The habit is to be cured by seeing that the parts are kept clean and dry, and by securing the child's confidence, and setting before her a high ideal of conduct.

Prevention of pregnancy.—This is now so frequent that I think it necessary to say what I think

about its effects on health. These depend upon the method used. The methods may be divided into three groups:

1. Methods which aim at preventing the semen from being deposited in the vagina. If this object is attained, pregnancy cannot occur; but if the woman has strong sexual feeling, the recurrence of sexual excitement without natural gratification will produce chronic pelvic pain and nervous exhaustion.

2. Methods which aim at preventing the semen, deposited in the vagina, from getting into the uterus. If this can be done, pregnancy is prevented. As the sexual act is completed, this method is not injurious to health, although the necessary preparations are nasty.

3. Methods which aim at killing the semen which has been deposited in the vagina. If this is done, pregnancy is prevented. But if a single spermatozoon escape the toxic agent, pregnancy may occur. Hence this method often fails.

The duty of medical men.—It will be seen that you cannot tell patients that in whatever way pregnancy be prevented, and in every case in which it is done, their physical health will suffer, for often it does not. But you should, if asked, advise against any such practices. Point out that women who do not have children are more liable to ovarian tumours than those who do.* Childless marriages afford a larger proportion of unhappy marriages than fertile ones. A couple who have one child and then prevent the arrival of any more inflict on that child a wrong. The companionship during childhood of brothers and sisters is worth far more than money.

* *See* Sir John Williams's Cavendish Lecture, *Lancet*, 1897.

CHAPTER XLV

STERILITY

Absolute and relative sterility.—Absolute sterility is that in which there is no child, no abortion, however early. Relative sterility is that in which a woman produces children in number not according to her condition, age, and length of married life. About 10 per cent. of married women are absolutely sterile.

The causes of sterility are as follows:—

Incompatibility.—In some cases of sterility there is no fault either on the male or female side. Husband and wife may each be capable of procreation, but there is an incompatibility between them which prevents them from procreating with one another. This incompatibility is a cause of sterility which we can neither explain nor cure.

Male sterility. — The chief causes of male sterility are : (a) absence of living spermatozoa in the semen (which condition may be present in a male quite potent as to intercourse) ; (b) absence of semen ; and (c) impotence. The causes and treatment of these conditions are not within the scope of this work.

Age.—The greatest cause of sterility in woman is age. The following table shows its influence :—

Age at Marriage	15–19	20–24	25–29	30–34	35–39	40–44	45–49
Percentage of wives bearing children within two years of marriage ...	43·7	90·5	75·8	62·9	40·9	15·4	4·3

The following table shows the effect of too early marriage :—

Age at Marriage	16	17	18	19
Percentage of wives bearing children within two years of marriage ...	12·9	30	46·4	57·8

These tables show that fecundity is greatest in women married between the ages of twenty and twenty-four. Of women married before this age, the earlier they are married the greater the prospect of sterility. Of those married after this age, the later they marry the more likely are they to be sterile. No cause of sterility approaches age in extent and power.

Developmental faults.—These affect—

The ovary.—If the ovaries are absent, or so imperfectly developed that ova are not discharged, reproduction is impossible. We cannot diagnose this condition before marriage.

Smallness of the uterus.—Imperfect development of the uterus is generally the result of imperfect development of the ovaries, and for that reason is associated with sterility. If the uterus has no cavity, pregnancy cannot take place, but anything short of this will allow of pregnancy. A uterus is essential only for safe delivery, not for pregnancy.

Stenosis.—Sterility has been said to depend upon congenital narrowing of the uterine canal, obstructing the upward passage of semen. No congenital stricture of the internal os uteri has ever been seen. Congenital smallness of the os externum is occasionally seen, but is rare. With it there is usually no dysmenorrhœa. Cases of labour are met with in which, in spite of strong pains recurring even for days, the os externum remains too small for the membranes to bulge through it. Smallness of the os externum

does not entail sterility. The foundation of the stricture theory is the fact that dilatation of the cervix sometimes cures sterility.

The foregoing causes of sterility are practically incurable. I come now to the conditions by the removal of which it is possible for some cases of sterility to be really cured.

Spasmodic dysmenorrhœa.—I have stated in Chapter XLIV. that spasmodic dysmenorrhœa is often associated with sterility, and with absence of sexual desire and pleasure ; and that in some of these cases dilatation of the cervix cures the dysmenorrhœa, establishes sexual desire and pleasure, and sometimes cures sterility.

The circular fibres of the cervix uteri can be paralysed or inhibited in other ways than by dilatation. The cervix may be cut. But this involves a little danger and has no advantage over dilatation. The only cases in which it should be practised are those in which the os externum is small. Then the vaginal portion should be divided and the os internum dilated ; the former proceeding being to prevent delay in labour.

An intrauterine stem may be worn. The presence of a stem in the canal makes it dilate. Therefore cure sometimes follows this treatment, as it does dilatation of the cervix. But I know not that these stems cure sterility when dilatation has failed. They are dangerous.

Dyspareunia.—It is not *necessary* for pregnancy that sexual intercourse should be complete. Medical literature abounds with cases in which, when labour has come on, the vaginal orifice has been found so small as to require surgical enlargement. In such cases sexual intercourse cannot have been complete. Deposition of semen at any part of the vagina, or even the vulva, *may* lead to pregnancy. The sper-

matozoa have a power of spontaneous locomotion which enables them to get to the uterus. But pregnancy is more likely to take place if intercourse is complete ; that is, if the semen is deposited in the upper part of the vagina, and the woman has the sexual orgasm. One of the most frequent ways in which sterility is cured is the removal of some impediment to complete intercourse. What these impediments may be I have described in Chapter XLIV.

Influence of sexual feeling.—There is no doubt that pregnancy often occurs in women who have no sexual desire or pleasure. There are women who think they can tell, by some difference in their feeling, the occasion on which they conceived.

Most cases in which sterility is cured are cured in the ways above described : by removing dysmenorrhœa, or dyspareunia, or both. But they only form a small proportion in comparison with the cases of sterility that are not cured. If you have cured dysmenorrhœa and dyspareunia, you cannot say that the patient will become pregnant; for the sterility may depend upon age or incompatibility, or be the fault of the husband. Therefore never promise to cure sterility.

There are certain modes of life unfavourable to fertility. If you can persuade the patient to alter such a mode of life, she may possibly become pregnant. Therefore these are curable by the patient.

Too frequent intercourse.—There is reason for regarding this as a cause of sterility. Hence, when asked to treat sterility, tell the patient that pregnancy is favoured by moderation in this respect. Change of air, by effecting a temporary separation between husband and wife, may be beneficial in cases in which this cause of sterility is suspected.

Alcohol.—Cases have occurred in which a woman given to alcoholic intemperance, and for several years sterile, after becoming a teetotaler

became pregnant. If in a similar case you can per-
suade the patient to give up alcohol, you may cure
her sterility, and will certainly do her good.

Obesity.—Very fat women are generally sterile.
It seems as if the body cannot both produce fat and
produce offspring. If a very fat woman desires treat-
ment for sterility, by prescribing a regimen which
will remove her superfluous fat you will improve her
health and possibly favour fertility. The treatment
consists in a dietary deprived of starch and sugar,
and plenty of exercise.

Displacements.—Anteflexion is said to cause
sterility. This is the natural shape of the uterus in
many virgins. The following tables show the effect of
backward displacements in producing relative sterility :

Age	UTERI DISPLACED BACKWARDS AVERAGE NUMBER OF		
	Children	Abortions	Pregnancies
Under 25	1·62	·29	1·91
25 to 29	2·75	·8	3·55
30 to 34	3·7	·87	4·57
35 to 39	5·4	1·3	6·7
Over 40	5·5	1·3	6·8

Age	UTERI NOT DISPLACED BACKWARDS AVERAGE NUMBER OF		
	Children	Abortions	Pregnancies
Under 25	1·5	·6	2·1
25 to 29	2·65	·76	3·41
30 to 34	4·3	1·13	5·43
35 to 39	5·51	1·22	6·73
Over 40	6·77	1·49	8·26

Retroflexion may be the cause of sterility when the body of the uterus is so tender that there is great dyspareunia.

Endometritis.—This has been said to be a cause of sterility. It is a word used so loosely that no one can tell without description what anyone means by it. There is no evidence that it has any effect upon fertility. Papers have been written about the cure of sterility by curettes, cauterising, etc., but none containing any presentation of evidence in a scientific form. In most cases supposed to have been thus cured, either there was no presumption of sterility, or the dilatation of the cervix was the actual curative agency.

Laceration, erosion and inflammation of the cervix have been alleged to cause sterility. If this were true, large families would be rare.

Chronic metritis is often associated with sterility. Pregnancy offers the best chance of cure.

Unhealthy vaginal secretions.—The vaginal secretions may be unhealthy, and kill the spermatozoa. It is proper to cure, if possible, any disease of the vagina or the parts which pour secretions into it.

Hypertrophy, elongation and unusual shape of the vaginal portion have been said to cause sterility. If the vaginal portion is abnormally long, and causes discomfort, cut it off. Peculiarities in the shape of a cervix have been, under the name of "conical cervix," assigned as a cause for sterility.* I doubt the relation between any particular shape of the vaginal portion and sterility.

Fibroids are said to be causes of sterility. They sometimes cause trouble in labour. Fibroids occur late in menstrual life, when sterility has generally been produced by age.

* *See* Barn.s, " Diseases of Women."

Perisalpingo - oöphoritis. — Women who have had pelvic peritonitis, and have inflammatory lumps still in the pelvis, may bear children. Pelvic peritonitis makes pregnancy less likely, and inflammation in the pelvis sometimes makes the sexual function a cause of suffering; but these are temporary, not invariable and permanent effects.

Artificial insemination consists in sucking up the semen with a syringe and injecting it into the uterus. There is one rare class of cases in which this may be proper—viz., those in which there is either a congenital defect (hypospadias), or a perineal fistula, in the male, so that semen cannot be deposited in the vagina. John Hunter is said by Sir Everard Home to have artificially inseminated a woman with success in such a case.

PART X

DISORDERS OF PARTS ADJACENT TO THE SEXUAL ORGANS

CHAPTER XLVI

TOO FREQUENT MICTURITION

Too frequent micturition must be distinguished from incontinence of urine. In both conditions the patient may say that she cannot hold her water. But in incontinence the urine is continually flowing away as fast as it is poured into the bladder; while in irritated bladder the urine is retained for a little while, but the call to void it comes too often.

Most conditions which make micturition painful also cause it to be too frequent. This is the case with all inflammatory diseases of the pelvic organs. But not all causes of frequent micturition produce pain in micturition. In this chapter I speak only of those which cause micturition to be too frequent but do not make it painful.

Causes of too frequent micturition.— Cases in which frequent micturition is the main symptom may be divided, for convenience of clinical study, into four classes :

Those in which there is *no local disease* appreciable by the ordinary methods of local examination.

2. Those in which vaginal examination reveals morbid changes in *the uterus or its appendages*.
3. Those in which no disease can be detected without examination of *the urethra*.
4. Those in which the cause cannot be made out without examination of *the urine :* that is, those dependent on disease of the bladder or kidneys.

1. Consider, first, the cases in which you find **no local disease** either of the uterus or of the urethra, and there is no morbid state of the urine.

(1) **Pregnancy.**—Micturition is generally more frequent in pregnancy than at other times.

(2) **Nervous disease.** — In certain nervous diseases, such as locomotor ataxy, the bladder is more irritable than in health.

(3) **Smallness of bladder.**—There are some women who are all their lives troubled by being unable to retain their urine so long as they would like to. In such cases the condition may be that the bladder is congenitally small.

(4) **Over-distension of bladder.**—In other cases the frequency of micturition dates from some occasion on which the bladder was over-distended.

(5) **Excessive quantity of urine.**—Micturition may be frequent, from an excessive quantity of urine, so that the bladder gets filled too quickly. Thus, in diabetes mellitus, diabetes insipidus, and in hysteria there is frequent micturition.

(6) **Nocturnal enuresis** —There is one kind of vesical irritability different from the rest, viz., nocturnal enuresis. This means that the patient, while asleep, passes water once or oftener during the night. This disease appears to be due to irritability of the spinal centre which presides over micturition. It is a nervous disease ; often runs in families. It is sometimes inherited, and a tendency to other nervous

diseases, such as migraine, epilepsy, insanity, hysteria, etc., will often be found to run in the family. It occurs chiefly in children, and usually gets well or is cured before puberty; but sometimes it lasts until after puberty.

Treatment.—In the treatment of this disease, causes of reflex irritation must be sought for and removed. Over-exertion should be forbidden. Try to break the morbid habit, by directing a nurse to wake up the patient, and make her rise and empty the bladder, at regular intervals during the night. The younger the patient, the more successful this treatment will be. Give belladonna.

Overflow from retention.—Never forget that frequent micturition, or even incontinence of urine, may indicate *retention of urine*. Hence when you are told that the patient has within the last few days been unable to hold her water, never omit to *pass a catheter*, not only to relieve retention, if present, but also to ascertain the condition of the urine. Urine passed naturally may be mixed with blood or pus from the vagina. Draw the urine off with a catheter, and you get it as it is in the bladder.

2. **Reflex irritation of bladder.**—Take now a case of too frequent micturition in which you find nothing wrong with the urethra, and the urine is healthy. Irritation of the bladder may be due to slight local causes of reflex irritation; a tampon of cotton-wool in the vagina, the effects of caustic, an ill-fitting vaginal pessary, hæmorrhoids, inflammatory disease in the pelvis, a displacement.

Bladder irritation from descent.—Some women who are at most times free from local discomfort, if they get depressed in health from any cause, get backache and irritation of the bladder. This is due to a temporary prolapse of the pelvic floor—so slight that it is not enough, in a woman

with a healthy nervous system, to irritate the bladder; nor to be detected by examination. It is a condition analogous to the aching and watering of the eyes which troubles hypermetropic patients when they get out of health, and which is due to temporary weakness of the ciliary muscle. The patient is not disturbed while recumbent. Escape of urine is often promoted in such patients by coughing. This bladder trouble is benefited by strychnine and ergot.

When prolapse is more marked, the troubles which it causes are present continually, not only for a few days at a time. With this there is generally some aching in the back and lower abdomen. These symptoms may be due to a slight degree of prolapse, without the patient being aware that anything comes down. The diagnosis is made by the symptoms, together with the physical signs. The characteristic features are these :—(1) The absence of pain on micturition. (2) The complete relief to the bladder irritation when the patient lies down. (3) The absence of all other symptoms beyond the backache, etc., common to all forms of prolapse. If the symptoms are continuous, and examination shows a slight degree of descent, or slight cystocele, or retroversion, then a pessary is advisable.

Dislocation of the urethra: its being either pulled upwards or dragged downwards has been described as a cause of irritable bladder. Prolapse of the urethra occurs with cystocele. I am not aware of any difference in the symptoms of cystocele depending upon the extent to which the urethra is dragged down with the bladder.

3. **Local disease.**—By looking at the parts you will discover the presence or absence of disease of the meatus, or of the vulva, or of vaginitis or vulvitis.

Stricture of urethra.—Frequency of micturi-

tion may be due to stricture of the urethra. A female urethra which will not let No. 10 catheter pass is the subject of stricture. Stricture of the urethra is less common in the female than in the male. The result of treating it is satisfactory.

Causes of stricture.—There may be congenital *smallness of the meatus.*

The most common cause in the young and middle-aged of stricture of the female, as of the male urethra, is *gonorrhœa.*

Another kind of stricture arises from *injury* to the urethra during difficult *labour*, leading to sloughing and the formation of a cicatrix, narrowing the urethra. The sloughing which follows labour more often leaves a vesico-vaginal fistula.

The urethra is sometimes surrounded by *thick fibrous tissue along its whole length*, and much narrowed. The urethra may be narrowed by the fibrous overgrowths of *esthiomène.*

The cicatrisation of a *chancre* situated on the urethra may produce stricture.

Symptoms.—Whatever the cause of stricture, irritation of the bladder and too frequent micturition are the consequence. You can only pass a small catheter, and this is gripped.

Treatment.—The treatment is to dilate the stricture with bougies. There is no difficulty in doing this.

4. **Bladder or renal disease.** — Pass a catheter, draw off the urine, and examine it. The bladder irritation may be from *cystitis*, or it may be from *disease of the kidney.* If the urine be free from sediment, test for albumen. In pyelitis and pyonephrosis frequent micturition may induce the patient to seek advice.

The presence of suppuration at some part of the urinary tract is indicated by pus in the urine. In

cystitis the urine is ammoniacal and alkaline in re-action. In pyelitis it is usually acid ; so that if it contains much pus, but is acid in reaction, this is a point in favour of pyelitis. But cystitis may be slight, and in that case the urine may contain pus and be acid. An expert in using the cystoscope will be able, with this instrument, if pyelitis be present, to see the pus coming from the ureter.

Disease of the kidney is not peculiar to women, and is therefore beyond the scope of this work.

PAINFUL MICTURITION

ABOUT half the patients who consult a specialist for the diseases of women complain of pain in passing water. In most this pain is trifling; in a few very severe.

Causes of slight pain in micturition.— A little scalding in micturition may be caused by *concentrated urine*. This slight pain is curable by telling the patient to drink plenty of water. Some slight burning in micturition goes with nearly every *pelvic inflammation*. Painful micturition is not so marked a symptom of gonorrhœa in the female as it is in the male. It is sometimes absent, and is seldom severe.

Causes of great pain in micturition.— There are three places in which disease may cause intolerable pain in micturition—namely, the *meatus urinarius*, the *urethra*, and the *bladder*. And first as to the *meatus urinarius*.

URETHRAL CARUNCLE

The new growth which more often than any other disease is the cause of severe pain in micturition in the female is *urethral caruncle*, " vascular tumour of the urethra."

Diagnosis.—When you look at the part you see a bright red growth, like a miniature cock's-comb, or like a small raspberry, springing from the lower

margin of the meatus urinarius. On the surface it is
bright red, smooth, and shining.

Structure.—Light has been thrown upon the
nature of these growths by Herbert Williamson and
Atlee.* They may be grouped into two main classes :
(1) Granulomata, (2) New growths. The granulo-
mata are the result of infection, usually gonorrhœal.
They consist of masses of granulation tissue covered
by a layer of squamous epithelium. The new growths
are formed by proliferation of the normal tissue ele-
ments in the urethra. These elements are :   (a)
squamous or transitional epithelium, (b) connective
tissue, (c) vascular spaces, (d) glands. According to
the extent to which one of these preponderates,
tumours are found which illustrate every inter-
mediate degree between (i.) an adenoma formed by
proliferation of gland tissue, and analogous to the
prostatic adenoma in the male, and (ii.) a tumour
consisting chiefly of large vascular spaces separated
from one another by dense connective tissue, in fact
an angeioma. The common tumours are of a mixed
type : adenoma-angeioma. It is singular, seeing how
tender these tumours are, that no one has yet suc-
ceeded in finding nerves in them.

Etiology.—They are more common in elderly
patients.

Symptoms.—The chief and invariable symptom
is *pain in making water.* The symptoms are worse at
the menstrual period. These growths generally pro-
voke increased frequency of micturition. Often there
is occasional temporary retention. This retention
is not mechanical, for the little growths are too small
and soft to be capable of stopping the outflow of
urine. It is nervous. There is generally more or less
constant *local discomfort.* The sensitiveness which

* See *Obst. Trans.*, vol. xlvii., 1905–6 ; and *Journal of
Obstetrics and Gynæcology of the British Empire*, Nov., 1904.

leads to pain even from the passage of the stream of
urine leads to still greater pain when the sensitive
growth is touched. Hence digital examination is
difficult, and there is such pain in sexual intercourse
as often to render it impossible. Some of these
growths are so vascular that they bleed readily; but
this is not the rule.

Associated morbid changes.—The most
frequent symptom not connected directly with the
growths is vaginal discharge. The knowledge that
these growths are often a result of gonorrhœal infec-
tion explains the frequency of vaginal discharge.

Clinical history. — The symptoms are of
gradual development. We know no spontaneous cure.
When removed, they tend to recur. The recurrent
growths are like the first. There is no tendency to
anything like malignancy; no infiltration of sur-
rounding tissues; no disease of glands; no secondary
growths elsewhere; no cachexia.

Treatment.—The treatment is removal. The
parts are too sensitive for anything to be done with-
out anæsthesia. Administer ether, for then the parts
can be examined, and the whole growth taken away
with greater certainty. The patient should be secured
in the lithotomy position. Then the growth should
be cut off, either with Paquelin's cautery-knife,
scalpel, or scissors. If the Paquelin be employed, put
a rod of wood the size of a No. 12 catheter into the
urethra, to guard its opposite wall. Cut round the
caruncle, so as to remove about one-eighth of an
inch of healthy tissue around its base. Keep the
patient in bed until the wound has begun to
granulate.

Varicosities of veins about the meatus form
bluish-red swellings under the mucous membrane.
To these the name of "*urethral hæmorrhoids*" has
been given. They are purple or bluish in colour,

not the bright scarlet of caruncles. They are not tender, and require no treatment.

Prolapse of the urethral mucous membrane needs to be distinguished from a caruncle. The former occurs chiefly in children ; while caruncle is a disease of later life. The prolapse of the mucous membrane takes place all round the meatus ; it forms a protrusion like a purple frill, having an opening in or near its centre ; it is not a growth springing from the lower part of the meatus only (Fig. 138). In a few rare cases the whole bladder has protruded, forming a red tumour on which the openings of the ureters can be seen.* This only occurs in children. When the protrusion is recent, the prolapsed mucous membrane can be replaced ; but when it has been external for some time, it becomes swollen and œdematous, and then cannot be reduced. The prolapsed mucous membrane has not the tenderness of a caruncle, but bleeds more easily. The caruncle is very tender, but does not bleed unless roughly handled.

When the urethral mucous membrane has prolapsed, the first thing is to push back the prolapse if possible. If you cannot push it back, cut off the protruded mucous membrane.

Inversion of the bladder must, of course, be replaced by pushing it back with a catheter.

Mucous polypi of the urethra have been described. They differ from the caruncle in being less vascular, and in not being sensitive. They are rare. Twist off a mucous polypus.

Fibroid tumour occurs sometimes in the urethro-vaginal septum. Fibroids form definite, circumscribed, rounded nodules, harder than any

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* *See* a case reported by Dr. J. V. Leech, *Brit. Med. Journal*, Oct. 17, 1896.

other growth or normal structure found in this situation.
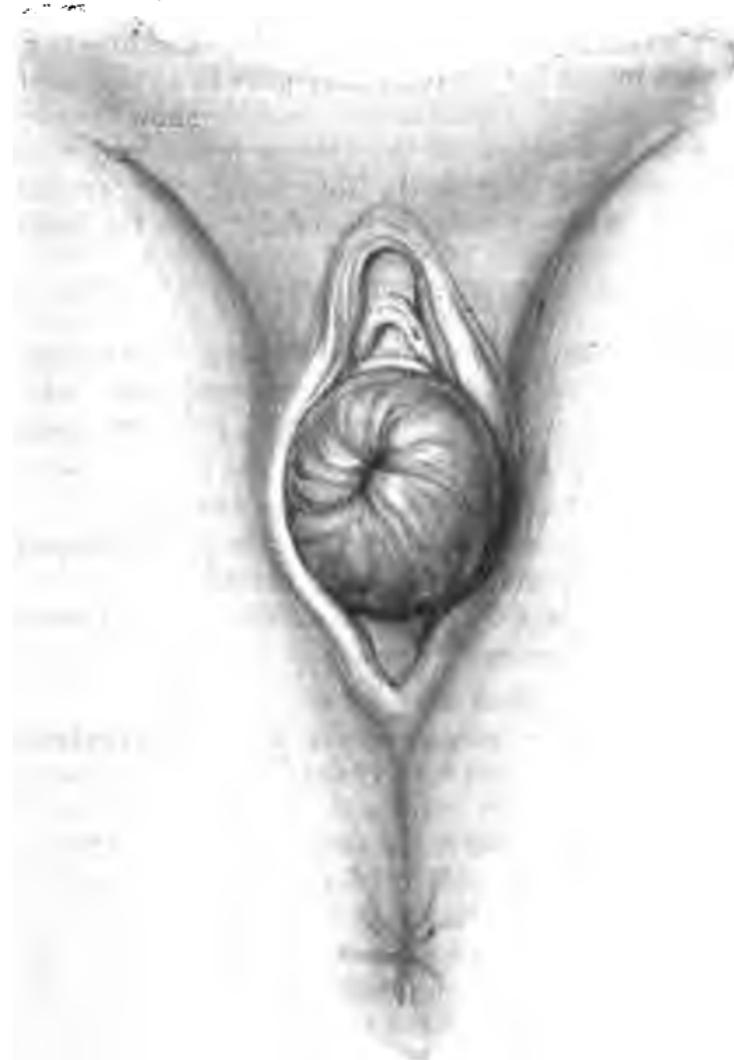
Fig. 138.—Prolapse of the urethral mucous membrane.
(*By permission of Mr. Bryant.*)

Sarcoma of the urethro-vaginal septum might be found involving the lower border of the meatus.

But such growths are under the mucous membrane, and present neither the redness nor the tenderness of the caruncle.

Cancer commencing in the urethro-vaginal septum might form a red warty growth at the meatus. Careful digital examination would show the presence of induration of the tissues below and around the sprouting outgrowth, this induration gradually merging, without definite boundary, into the healthy tissue.

URETHRAL DISEASES

The cause of the pain in making water may be *in the urethra.* There are four conditions of the urethra which may cause great pain in passing water. They are :—

1. Chronic congestion of the urethra.
2. Chronic abscess of the urethro-vaginal septum.
3. Suppurated cysts of the urethra.
4. A tender red condition of the urethral mucous membrane.

These conditions are all rare.

1. Chronic congestion of the urethra.— This disease is seen in pregnant women, or in women who have had many children. The urethra is swollen and tender. It feels like a cord, as thick as the finger or thicker, and it is so tender that there is not only severe pain on micturition, but sexual intercourse is so painful as to be practically impossible. There is continual aching round the loins and in the lower abdomen, and the patient has to pass water frequently. These symptoms are not at once relieved by lying down, but they are improved by prolonged recumbency and gentle laxatives.

I now have to speak of pathological changes which may originate in this congestion of pregnancy, combined with the accidents of labour.

2. **Chronic abscess of the urethro-vaginal septum.**—This is rare.   There is pain in micturition. and with it frequent micturition, so that at length the patient is in continual pain, the pain after micturition not having gone by the time the patient feels the call to make water again.   Sexual intercourse becomes attended with pain—first slight, at length so bad as to make this function impossible.   On vaginal examination there is felt in front a tense, hard, convex, bulbous swelling.   When the catheter is passed it is found that this swelling is between the urethra and vagina.   The symptoms may extend over three or four years.   The points sufficient for diagnosis are : a tense, convex, very tender swelling between the urethra and the vagina.   The only question is whether the collection of pus is a simple abscess, or whether it is a suppurated cyst.   If there is a spot on the vaginal aspect at which the wall of the bulging swelling is thin and fluctuation can be felt, cut into this thin part.   If there is no such thin spot, dilate the urethra with Hegar's dilators till the canal will admit the finger.   Then insert the finger, and explore the urethral aspect of the swelling.   If there be no tendency to point towards the vagina, the abscess wall on the urethral side will be thin.

3. **Suppurated cysts of the urethra.**—In the floor of the urethra there are crypts called glands of Littré on the anterior half of its floor, and larger glandular follicles (Skene's glands and Schüller's glands) just within the meatus.   Dermoid cysts also occur in the urethro-vaginal septum.

Whatever the mode of origin, it comes to pass that a pouch is formed, communicating with the urethra by a narrow opening.   Urine gets into this pouch, decomposes, and inflames the sac.   The patient suffers from pain and frequency in micturition, and pain in sexual intercourse.   You find in the

urethro-vaginal septum a round, tender swelling, in size from that of a pea to that of a hen's egg. When you press upon this tumour, you can squeeze out its contents, which consist either of urine mixed with pus, of sebaceous matter, or of calcareous deposit. The symptoms often date from a labour. A suppurated cyst or diverticulum does not run the course of an abscess, which gradually closes up when a free opening has been made for the escape of pus, but it continues indefinitely in the same state, alternately filling with pus and urine, and being partially emptied by pressure.

Treatment.—The treatment is the excision of the whole or greater part of the cyst wall. The best way is first to lay the cyst freely open from the vagina. If the vaginal opening be kept from closing by packing it with lint or gauze, retention of fluid in the cyst will be prevented, the urethral opening may close, and then the cyst will be left opening only into the vagina. As urine no longer gets into it, the inflammation will subside, and the cyst will give no further trouble.

A suppurated cyst cannot be distinguished from an abscess. If the cavity be an abscess it will quickly fill up ; if it does not it should be treated as a cyst and dissected out.

4. Tender red patches in the urethra.— In these cases the patient complains of severe pain when she makes water. There is nothing the matter with the meatus. You can feel nothing wrong with the urethra. Pass a catheter. You may find that the patient shows signs of suffering, and tells you that the pain the catheter caused is like that which she has every time she passes water.

To ascertain the condition of the urethra you must look at its interior with a speculum. Be careful to pass this gently, and to look at the mucous

membrane as soon as it is exposed; for the mucous membrane, if diseased, is more likely to bleed than if healthy. If it bleeds you cannot see what its condition is.

In this tender condition of the urethra you find that its mucous lining, instead of being the same pink colour as the rest of the vulval mucous membrane, is either wholly or in patches of a vivid red or of a deep purple. The condition seems to me allied to the purple tender patches on the vulva, which I have described in Chapter XLIV.

Diagnosis.—This disease can only be detected by examining the urethra with a speculum.

Treatment.—The morbid change can be cured by local treatment. Put in the urethra, once in two or three days, a bougie an inch and a half long, made of two grains of iodoform, or six grains of dermatol, and as much cacao butter as necessary. A little wool put between the labia will prevent the bougie from slipping out. In recent cases three or four bougies will cure the patient. In cases of long standing more prolonged treatment may be required.

DISEASES OF THE BLADDER

Fissure of neck of bladder.—Suppose now the case of a patient who complains of severe pain in micturition, and in whom the urethra is healthy. As the catheter passes into the bladder, at one spot (the neck of the bladder) it causes severe pain. The urine is free from pus, so there is no cystitis. The disease is that variously described as hyperæmia, or ulceration, of the neck of the bladder.

The symptoms are extreme pain in micturition, persisting afterwards, and great frequency of the call to empty the bladder. Sometimes a little blood escapes with the urine. When the bladder is examined with the cystoscope—a proceeding for which

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anæsthesia is desirable—a fissure may be seen as a small greyish ulceration, with red inflamed edges, at the vesical neck. The diagnosis between fissure of the neck of the bladder and cystitis is made by the presence or absence of pus in the urine. The diagnosis between fissure and hyperæmia may need the cystoscope. Whether fissure or hyperæmia be the condition, the treatment is the same.

Treatment.—The first thing in treatment is to *dilate the urethra under anæsthes:a* with Hegar's dilators. Pass these up to 16 or 17, and the urethra will then admit the finger.

Advantages of dilatation of urethra.— In stretching the neck of the bladder, the sphincter is for a time paralysed, and possibly sensitive nerve twigs are torn across. In cystitis, temporary improvement is the invariable result of stretching the urethra; and in these painful conditions of the urethra and neck of bladder, temporary benefit always follows, and sometimes cure. Dilatation of the urethra facilitates diagnosis; with the finger in the urethra you can feel the inside of the bladder, and detect any new growth, thickening, or inequality.

Objections to dilating urethra.—There are two objections to dilating the urethra. One is the risk of septic infection; the other that of permanent loss of control over the bladder. I have never known incontinence of urine follow dilatation of the urethra to the degree necessary to admit the finger. If the finger can be put in the bladder, that is enough for diagnosis. If there is a stone, a new growth, or a foreign body to be removed, it is bad surgery to try to remove it through the urethra. Examine the bladder through the urethra; treat it through the vagina.

Vaginal cystotomy.—Assume, now, that the temporary improvement produced by the dilatation

has not persisted. The surest, quickest, and least disagreeable way of curing the patient is by vaginal cystotomy. Open the bladder from the vagina. If the incision is median no important part can be wounded. The opening should be large enough to admit the finger. One of the indiarubber stems known as Greenhalgh's may be used to prevent the incision from healing ; or the vesical mucous membrane may be sewn to the vaginal on each side by a catgut stitch.

The effect of this is that the bladder is kept at rest. All pain ceases at once ; and if the artificial fistula is kept open long enough, the ulcer heals, and then the fistula can be closed, and the patient remains well. Although the patient is free from suffering, yet she for the time is continually wet. The best way of minimising the discomfort of this is to keep the patient on a bed provided with a receptacle into which the urine can flow. The absolute rest in bed favours the recovery of the bladder, and so is beneficial. I have had various urinals tried ; but none is satisfactory. Such an incision into the bladder contracts to a canal only large enough to admit a probe, and sometimes heals. One reason why I prefer not to stitch the mucous membrane of the bladder to that of the vagina is because it is more likely to heal spontaneously if this stitching is not done. It is impossible at present to lay down a rule as to how long such a fistula should be kept open. Relief follows at once when the fistula is made, and if when it heals relief continues, nature has shown us what is a sufficient time in that case. I have found two months a sufficient time, the patient being in bed. If symptoms return as the fistula heals, the passage of a sound will easily break it open.

Cystitis.—A commoner cause of painful mic-

turition is cystitis. The urine is alkaline, and contains pus. I describe only those features which are
peculiar to cystitis as it occurs in women. These are
that the female bladder can be (1) more easily explored, and (2) more easily treated than the male
bladder.

Exploration of the female bladder.—
The female urethra is short and easily dilated. This
makes the inside of the bladder accessible both (a)
to touch and (b) sight. I have already described
(a) how the urethra can be dilated and the bladder
explored by the finger. (b) Visual examination of
the interior of the bladder has been made practicable by Pawlik. His method, with some modifications, has been introduced to English-reading surgeons
by Howard Kelly.

How to inspect the interior of the bladder.—The inside of the bladder can be looked at
through a small speculum without dilating the urethra,
and without anæsthesia. To get a good view, the
urethra must be dilated, and a large speculum used;
and this cannot be done without anæsthesia.

The anæsthetised patient is held in the lithotomy
position with her pelvis well raised. The bladder is
emptied. Then the urethra is dilated with Hegar's
dilators. This may be done up to No. 17 (that is, a
dilator 17 millimetres in diameter) without risk of
subsequent incontinence of urine. Then a speculum,
a polished metal tube with a trumpet-shaped end,
provided with an obturator, is inserted (Fig. 139).

The examiner puts on a laryngoscopic mirror.
He may be opposite a window, or he has a lamp so
placed that the light from it may be reflected by the
mirror into the speculum. The mucous membrane
is then dried by swabbing it with cotton-wool.

When this has been done, the inside of the bladder
can be inspected. By turning the speculum about

30° to one side or the other, the ureteral orifices can
be brought into view. A suitable catheter can be
passed into it. Sometimes the ureteral orifice can be
identified only by seeing·urine escape from it.   When
inflamed it may be more easily seen as a round hole
in a circular eminence ; and if the renal pelvis be
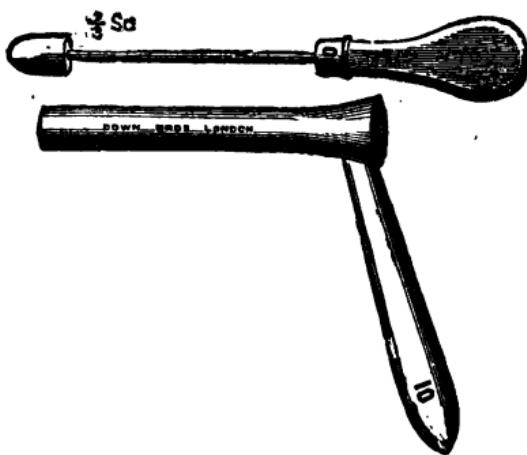
Fig. 139.—Urethral speculum. (*Pawlik-Kelly.*)

inflamed, the flow of pus will mark out the ureteral
orifice more distinctly than that of urine.

The causes of cystitis in women.—It may
be useful if I mention here the ordinary causes of
cystitis in women.

1. *Retention of urine* may set up cystitis. (*See*
next chapter.)

2. *Entrance of microbes.*—Most often they are the
microbes found in the lochia of puerperal women,
comprehensively denoted by the adjective "septic."
They are often carried in by the catheter.   We
know not all the conditions upon which the power of
microbes to cause cystitis depends.

3. *New growths* in the bladder—tubercle, cancer,
polypi, villous growths.   These are all rare.   They

all cause hæmaturia, as well as pyuria. Cancer of the bladder may be a primary disease. The finger feels either a warty growth or an ulcer, with friable surface, and thickened base and edges. It has been treated by extirpation of the whole bladder. Polypi of the bladder may be fibromatous, myomatous, sarcomatous, or adenomatous. A polypus—that is, a stalked tumour of the bladder—either in bladder or urethra, is very rare. If present, it will be detected with the finger.

4. *Foreign bodies in the bladder.*—The commonest of these is stone. There may also occur bones from an ectopic pregnancy; bone, hair, or masses of solid tissue from a dermoid cyst; pus from abscesses; and foreign bodies put in through the urethra by the patient.

Course of cystitis.— In cystitis from retention, when the retention has been relieved, the course of the disease is towards recovery. How long recovery takes depends upon the extent to which the bladder wall has been damaged by the retention. It may be so damaged that the whole mucosa or a large piece of mucous membrane may be detached. This only occurs after long retention. Its commonest cause in women is retroversion of the gravid uterus; next to that, retention after labour. It does not begin to get well until the exfoliated piece has been got rid of. Cystitis from new growths or foreign bodies lasts until its cause has been removed.

The treatment of cystitis in the female.— Cystitis is more easily cured in the female than in the male, because the female bladder can be so easily emptied and drained. The first thing is, if possible, to remove the cause of the cystitis. To remove anything from the bladder, open it through the vagina by an incision in the middle line. By such an incision you can get as much room as you

want. If the cystitis is severe do not sew up the incision, for drainage of the bladder through the opening will be the best possible thing to cure cystitis. The wound will often heal in two or three weeks, and if not it will contract to the size of a pinhole, and can then be closed easily.

When the cause has been removed, let the bladder be washed out night and morning with a non-irritating antiseptic, by means of a funnel connected by india-rubber tubing with a double-channelled catheter. The force of the stream depends upon the height to which the funnel is raised. It should not cause pain. If cystitis is still recent it will quickly cure it. If this treatment is not effective or if there be much pain, drain the bladder, so that it may have perfect rest, in the way I have described in speaking of fissure of the vesical neck.

CHAPTER XLVIII

RETENTION OF URINE

Hysterical retention.—In any case of retention of urine, the first thing to do is to pass a catheter. Sometimes retention of urine occurs in young girls who have no disease of or near the urinary organs. This is called *hysterical retention.* I have said more about it in Chapter III. Until you have examined the pelvic organs and the contents of the bladder you cannot be sure that the case is one in which the catheter had better not be used.

Lack of expelling power.—*Over-distension* of the bladder may so weaken its wall that it does not contract, and hence urine is retained. *After labour,* the patient is sometimes unable to pass water while she is lying down. When she sits up in bed she can pass water. Retention may be the result of *nervous disease.*

Retrouterine swellings.—You may find a swelling behind the uterus, driving the cervix forwards and compressing the urethra. These swellings may be :—

1. The body of a retroverted gravid uterus.

2. A fibroid : either (*a*) a growth from the back of the uterus, the cervix and uterine cavity being pushed forwards ; or (*b*) a growth in the uterine wall retroverting or retroflexing the uterus.

3. An ovarian tumour.

4. Serous perimetritis.

5. Retrouterine hæmatocele.

6. An abscess.
7. A malignant growth.
8. An extrauterine gestation sac.
9. Hydatid cyst.

Retroversion of the uterus—whether with pregnancy or with a fibroid—differs from all the other conditions mentioned in this, that the body of the uterus is not to be felt in its normal situation.

When the uterus is pushed forwards by a swelling behind it, it is pushed nearer the abdominal wall. Being pushed forwards and upwards, the uterus can be easily felt by bimanual examination. This is the sign by which retroversion of the uterus is to be distinguished from a swelling behind the uterus pushing it forwards. If you feel doubtful whether what you feel bimanually is the uterus or not, use the sound, which will pass two and a half inches or more in the upward direction.

In retroversion of the gravid uterus, when you examine bimanually, after the bladder has been emptied, you will find that between your finger on the cervix and the hand on the abdomen there is only the cervix, not the body of the uterus.

Importance of retroversion of the gravid uterus.—Retroversion of the gravid uterus is the most common, and therefore the most important cause of retention of urine in women. If left unrelieved it is likely to prove fatal, (a) by cystitis spreading up the ureters to the renal pelvis, and so causing pyelitis, uræmia, and death. Pyelitis may prove fatal long after the retention which caused it has been relieved. (b) By cystitis spreading through the bladder wall to the peritoneum or to the cellular tissue. Or, (c) by cystitis so severe as to kill part of the bladder wall; thus by the separation of a slough the bladder is perforated, or so thinned that it gives way to pressure, and urine escapes into the

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peritoneum or cellular tissue according to the site of the perforation.

Sources of error in the diagnosis.—Distension of the bladder by retention causes great pain and great swelling of the belly. The latter often misleads, for although the patient's history suggests that she is in the fourth month of pregnancy she knows, and her doctor sees, that her belly is much bigger than that early stage of pregnancy would account for. When the retention has lasted a few days, the tension within the bladder becomes so great that the resistance of the blocked urethra is partly overcome, and the urine trickles away through it in drops. The patient will now tell you, not that she cannot pass water, but that she cannot retain it. Hence always remember that a complaint of incontinence of urine may indicate retention.

Retroversion of a fibroid.—A fibroid, if it be the size of a uterus in the fourth month of pregnancy, may retrovert the uterus, become incarcerated, and cause retention of urine just like a pregnant uterus. Distinguish such a fibroid from a pregnant uterus by the greater hardness of the fibroid. With a fibroid the colour of the mucous membrane is that of the buccal mucous membrane.

The treatment is, *first*, to draw off the urine, and *then* to push up the displaced uterus. Push towards one side, so that you may evade the sacral promontory.

Retrouterine tumours.—A retrouterine tumour causing retention may be ovarian or a fibroid pushing the uterus forward so as to compress the urethra and cause retention. Such a tumour may have been pushed down during some effort, and have then got incarcerated under the sacral promontory. Or it may have been slowly growing in the pelvis, causing no trouble until it got so large as to produce

retention. If so, a few days' rest in bed after the urine has been drawn off will prevent recurrence of the retention.

Hydatid cysts.—A retrouterine tumour causing retention may be a hydatid cyst* (Fig. 140). They are often multiple. They cause no symptoms except
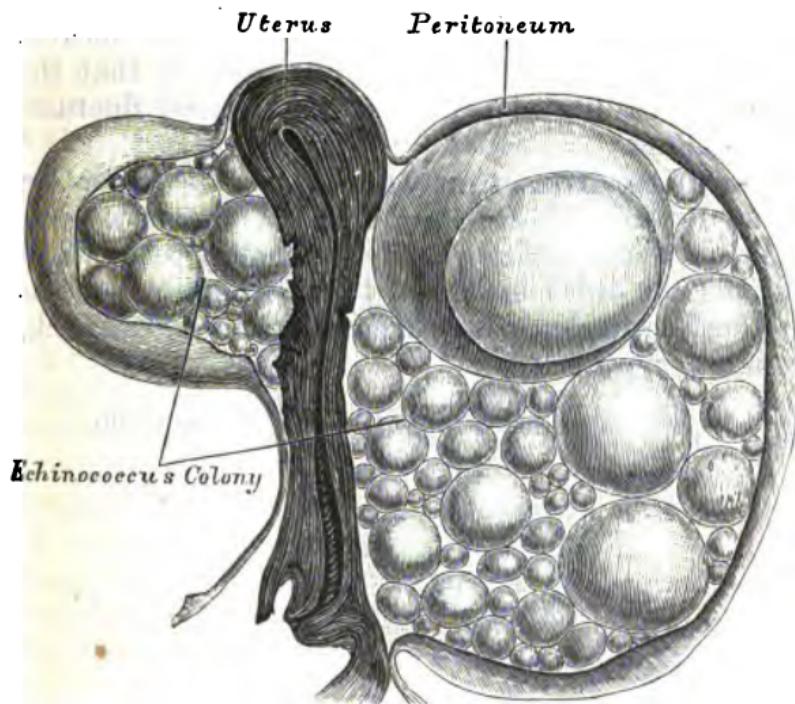
Fig. 140.—Retrouterine hydatid. (*After Bland-Sutton.*)

by their size, unless they suppurate. A hydatid cyst causing retention of urine will be underneath the peritoneum. I know not how it is to be distinguished from other cysts that occur in this situation until it has been opened and the characteristic fluid and lining membrane let out.

* See a case by the Author, *Lancet*, Nov. 21, 1896. For an account of hydatids in the peritoneum generally, *see* Fenwick, on " Obscure Diseases of the Abdomen."

Blocking of the urethra.—Cancer may block the urethra so that the patient cannot pass water. The best treatment of such retention is to make a fistula by cutting in the middle line from the vagina into the bladder. If this is not done, the breaking down of the cancer will in time make a fistula, after causing great suffering to the patient. I have known ulcerated surfaces of esthiomène at the meatus adhere, and close the meatus urinarius, so that the urethra was dilated into a sausage-shaped fluctuating swelling.*

Spasmodic retention.—Spasmodic retention without disease of bladder or urethra is rare in women, but sometimes occurs. Retention may occur from any disease which makes micturition painful, such as urethral caruncle, stone, fissure of the vesical neck, vesical polypus.

* I have reported the case in *Obst. Trans.*, vol. xxviii.

CHAPTER XLIX

INCONTINENCE OF URINE

THIS means that the patient cannot retain any urine. An opening in the bladder wall may be the result (*a*) of damage during labour or operations, or by some accident; or (*b*) of sloughing from inflammation; or (*c*) of the breaking down of malignant disease; or (*d*) of congenital malformation.

Vaginal fistulæ.—There are three ways in which such fistulæ may be formed. (1) By *tearing*. Tears in the vagina may extend to the bladder or the rectum; and then, if healing be imperfect, a fistula is left. This is the usual way in which recto-vaginal fistula is formed; but it is a rare mode of production of vesical fistulæ. (2) By *perforation*. That is, by a sharp instrument or point of bone being thrust through the vagina into the bladder or rectum. This is rare. Fistulæ, formed either by tearing or perforation, have this feature in common, that the symptoms they cause appear immediately after delivery. (3) By *sloughing*. Nineteen out of twenty vesical fistulæ are produced in this way. When so produced, symptoms are postponed till after the separation of the slough. The sloughing comes from continuous compression of soft tissues between the fœtal head and the pelvic bones.

Situations of urinary fistulæ.—The slough may involve the cervix uteri and the ureter, a *uretero-cervical fistula* being formed. One or both ureters may open into the fistula. If there is a hole in the

bladder, as well as destruction of part of the ureters
and cervix, the condition is called *vesico-cervical* (or
incorrectly, *vesico-uterine*) fistula.   The destruction
may involve a large part of the cervix uteri and the
vagina, and this is called *vesico-cervico-vaginal* (or
vesico-utero-vaginal) fistula.   Fistulæ involving the
cervix uteri are rare ; and fistulæ involving the ureter
are still rarer.   When the bladder wall is killed at the
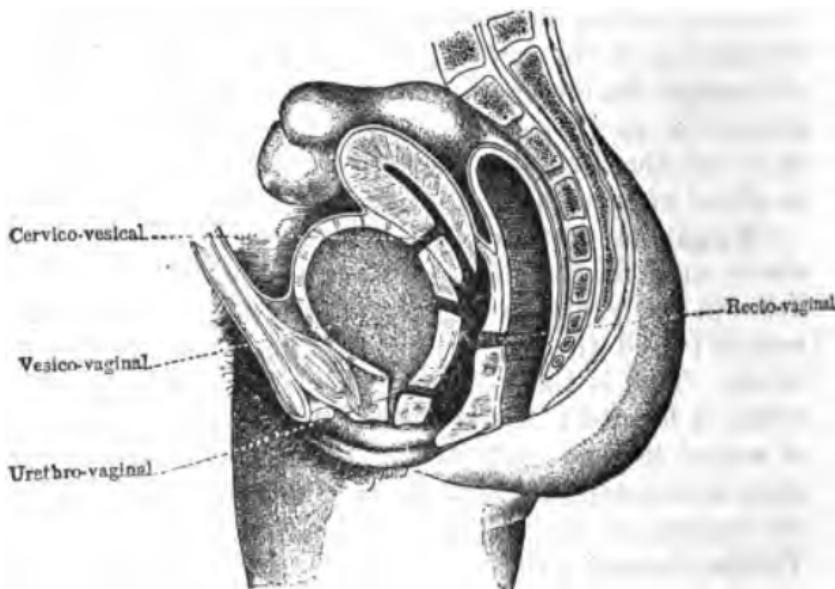
Fig. 141.—Diagram illustrating the different kinds of fistula.
(*After Sinety, by permission of Messrs. Macmillan & Co., Ltd.*)

part where it is in relation with the vagina, a *vesico-
vaginal fistula* is the injury which results (Fig. 141).
It is possible that two fistulæ, a vesico-cervical and
a cervico-vaginal, may be formed.

Annular sloughing (Fig. 142).—The killing
of tissue by pressure may affect more than the
cervix ; it may involve also the upper part of the
vagina and the base of the bladder.   When healing
has taken place the vagina is found converted into

a short funnel ending in scar tissue bounding a small hole not large enough to admit the finger.

Symptoms. — The symptom which a vesical fistula causes is that the patient's urine continually runs away through the vagina. The only exception to this is that when the fistula is small the pressure of the vaginal wall against it will sometimes, if the patient is recumbent, temporarily close, and retain a

Fig. 142.—Slough of cervix uteri, upper part of vagina, and base of bladder. (*From a specimen in London Hospital Museum. Drawn by Dr. J. H. Sequeira.*)

little urine in, the bladder. Hence these patients sometimes say that they can for a time retain the urine while lying down.

History.—When a fistula has been formed in the usual way the history will be that the patient had a long labour, but no incontinence of urine till from five to ten days afterwards (which is the usual time for the separation of the slough), or even later, and that then the urine began to run away involuntarily.

Diagnosis.—This can only be made by physical

examination. Put the patient on her side, and expose the cervix and vagina with a duck-bill speculum. If there be a vaginal fistula the opening will be seen. Cervical fistulæ are generally small ; vaginal fistulæ are often large. If when the cervix and vagina are exposed the fistula cannot be seen, and yet there is no doubt that urine continually escapes by the vagina, put a catheter in the urethra and inject milk into the bladder. If there be a very small vaginal fistula, the white jet of milk escaping through it will be easily seen and will mark it out. If a cervical fistula, the milk will come back through the cervix uteri. If the fistula be uretero-cervical on one side, the history will be that the urine flows continually away by the vagina, while yet some urine is passed naturally ; and when milk is injected into the bladder, none flows into the vagina. A cervical fistula involving both ureters would be characterised by flow of all urine through the vagina, while examination by injection of milk shows no passage from the bladder to the vagina.

Usual concomitants. — With a fistulous opening into the bladder there is generally cystitis. There is often fixation of the parts by parametric exudation and contraction of the vagina by scar tissue. The irritation of the urine causes inflammation of the skin of the labia and thighs ; and the mucous membrane and skin are often encrusted with earthy salts.

Relation to operative delivery.—When inquiry is made as to the labour after which a fistula has formed, it is in most cases found that operative delivery was required. The public are apt to think that the fistula was produced by the operative delivery ; and it is true in a few cases. In most cases the fault has been that operative delivery was put off too long. I have known vesico-vaginal fistula produced by the *accouchement forcé* in placenta prævia.

Treatment. — The *curative* treatment of a urinary fistula is its closure by a plastic operation.

The *palliative treatment* consists in the constant use of some appliance to receive the urine : either a urinal or frequently changed absorbent pads.

OPERATIONS FOR VESICAL FISTULA

Closure of a fistula without loss of substance (Fig. 143). — Put the patient in the lithotomy position. Expose the fistula with a duck-bill speculum. Grasp the margin of the fistula with toothed forceps, and with a fine tenotomy knife pare away a strip of mucous membrane about $\frac{1}{3}$ in. in breadth all round the fistula. Take a needle threaded with No. 1 silver wire ; enter its point in the mucous membrane close to the raw surface. Let its point emerge through the raw surface at the edge of the fistula. Enter it again through the raw surface at the opposite edge of the fistula, and bring it out through the mucous membrane close to the raw surface. Put in a stitch on each side of this, about $\frac{1}{4}$ in. from it. This done, clean the raw surface from adherent clot, and draw together and fasten the sutures with Aveling's coil and shot. Inject milk into the bladder to see that the closure is complete. In a week remove the coil and shot. Take out the stitches at the end of a fortnight.

Fistulæ with loss of substance.—Here you have, instead of a pinhole, a large irregular gap. If the fistula is of such size and shape, and its margins are so movable, that you can get its opposite borders into apposition, the operation, though tedious and perhaps difficult, is simple. Pare off a strip of mucous membrane about $\frac{1}{3}$ in. wide all round the margin of the fistula. Then, with needles of suitable curve, enter stitches through the mucous membrane close to the raw surface, bringing them

out through the raw surface, entering them again through the opposite raw surface, and bringing them out through the mucous membrane. Take care that the stitches pass through the mucous membrane so close to the raw surface that no mucous membrane is tucked in between the raw surfaces ; for if mucous membrane is so tucked in union will not take place. If you pass the stitches not through the mucous membrane, but only through the raw surface, they are likely to cut their way through the denuded tissue, which is weak. If the margins of the fistula are so situated that you cannot make one needle traverse both raw surfaces, use needles threaded with silk, and leave a loop of silk projecting towards the opening of the fistula ; the wire can be hitched round this, and thus drawn into position.

How to deal with contractions of the vagina.—One source of difficulty in operations for vesico-vaginal fistula is contraction of the vagina by scar tissue below the fistula. If so, the contracted vagina must be either dilated or divided. The simplest way is to cut with a scalpel in the direction of the tubera ischii on one or both sides, as may be needed.

Colpocleisis (κόλπος, the vagina; κλεῖσις, a shutting up).—If all attempts at repairing the vesico-vaginal septum fail, the only resource left is to close the vagina, so that the patient may menstruate into the cavity which contains the urine. This is a simple operation. The objection to it is that the pouch in which the urine is contained is a space in which there is always some residual urine, and in which, therefore, decomposition of urine and formation of a phosphatic calculus are likely to take place. Colpocleisis, although it stops the dribbling of urine, is yet not satisfactory.

Method of operation.—Pare away a strip of mucous membrane at least half an inch in breadth

all round the vagina. The broader the raw surface,
the surer you will be of getting union. Then put in
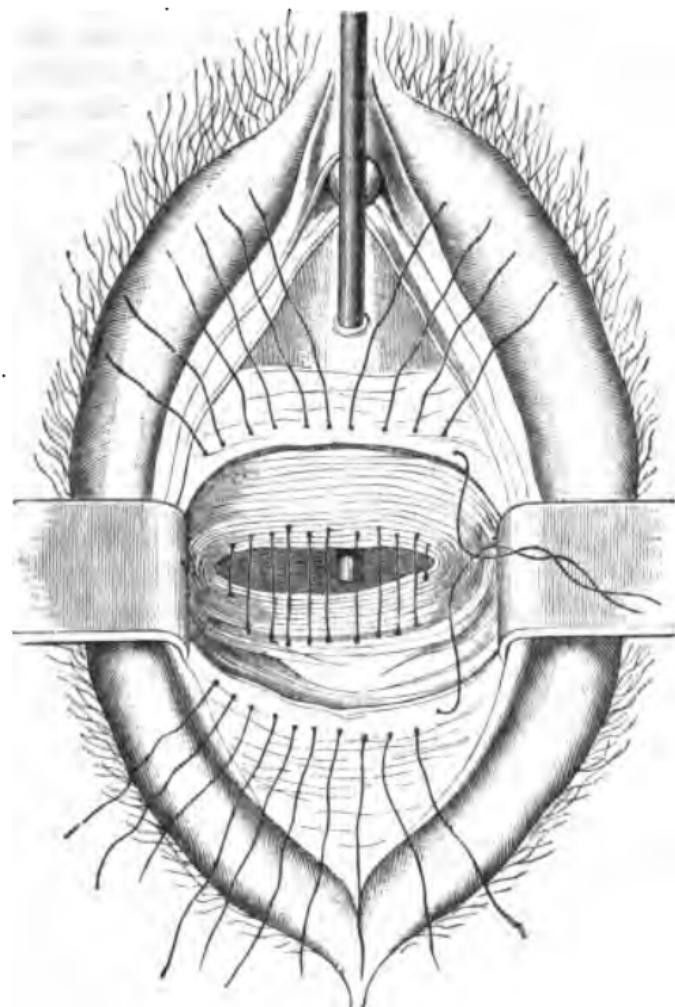
Fig. 143.—Mode of stitching in closure of a small vesico-vagina
fistula. (*After Simon.*)

stitches so as to bring the raw surfaces of the anterior
and posterior walls into contact.

Vesico-cervical fistula.—A fistulous opening
between the cervix uteri and the bladder, not in-

volving the vagina, must be a small one. It is best
dealt with by a method described by Champneys.*
Open the cervico-vesical cellular tissue. Separate the
bladder from the uterus. The hole in the bladder
and that in the cervix will be visible. As the tissues
are raw, no paring is required. Stitch the margins
of the vesical fistula. Let the hole in the cervix
alone.

* *Obst. Trans.*, vol. xxx.

CHAPTER L

PAINFUL DEFÆCATION

Women often complain, among other things, of pain in defæcation, a symptom for which Robert Barnes introduced the name "*dyschezia*" (δύς, difficult; χέζω, I go to stool).

Constipation.—The common cause of painful defæcation is the passage of scybala so large and hard that they hurt the bowel, the lower end of which becomes congested and often inclined to bleed. Women are costive oftener than men. Pain simply from hard fæces is not severe, and does not last long. The treatment is to get the bowels open daily, so that the motions may not be large and hard.

Prolapse.—In patients with any form of prolapse, the straining which accompanies the expulsion of scybala increases the displacement, and aggravates the bearing-down pain.

Retroflexion.—In this displacement, besides the increase of the bearing-down feeling caused by prolapse, there is often pain arising from the pressure of descending scybala on the fundus uteri. In any case in which the uterus has to be supported by a vaginal pessary, regulation of the bowels is important, because during the effort with which hard lumps are expelled the pessary is liable to be forced out.

Prolapsed and tender ovary. — When an ovary is tender and lies low down behind the uterus, the pressure on it of scybala as they pass may cause

a dull, sickening pain, which is felt *before* the motion passes, and lasts some time—it may be half an hour or an hour—afterwards. This pain is prevented by making the motions soft.

Pelvic peritonitis.—With this disease pain is felt *before* the action of the bowels. The bowel pulls upon adhesions, and thus causes pain. If the motions are [hard, their pressure on inflamed parts may hurt.

Conditions which produce changes in the bowel.—When there is a large effusion into Douglas's pouch, whether of blood, pus, or serum, it is frequent for the bowel to become *congested*, so that there is not only pain, but frequent desire to go to stool, with straining, and passage of blood and mucus.

A retroverted gravid uterus, an ectopic pregnancy, an ovarian, a fibroid, or other rarer tumour, may so press on the bowel as to *obstruct* it. Intestinal obstruction from this cause is not common, because pelvic tumours capable of blocking the rectum generally also produce retention of urine, and this causes urgent symptoms long before obstruction of the bowel.

Effusions into the cellular tissue sometimes extend round the bowel, forming a half-ring of induration round it. This becomes organised into fibrous tissue, and narrows the calibre of the bowel, so that the passage of hard fæces may be hindered, though not that of loose motions. This kind of rectal stricture with time becomes less marked, as the fibrous tissue gets looser. But I have known it last for years.

Disease of the rectum.—Fissure.—The chief cause of *very* painful defæcation is what is called "fissure of the anus." The characteristic symptom of fissure is very severe pain, lasting from half an hour to two hours after defæcation.

The treatment is to paralyse the sphincter ani, either by cutting or over-stretching.

Spasm without fissure.—Nervous women sometimes suffer from painful spasm of the sphincter ani without ulceration. There is pain after defæcation, but it is not so severe and does not last so long as when there is fissure, and the motions are not streaked with blood. These symptoms are worse at the menstrual period. The treatment consists in dilatation of the sphincter.

Hæmorrhoids do not cause severe pain in defæcation, but rather discomfort about the anus. Varicosities of rectal veins are favoured by conditions leading to pressure on the rectum, such as retrouterine tumours, possibly also retroversion of the uterus.

Prolapse of the rectum may be taken for piles. The prolapsed rectal mucous membrane is of a brighter red colour, and softer than piles.

Cancer of the rectum.—Bleeding and discharge are the earlier symptoms; pain comes later. Discharge is more suspicious than bleeding, for slight bleeding is often a result of constipation. The only other common condition which causes discharge is fistula; and with this there is a history of an abscess. In cancer of the rectum, as in cancer of the uterus, success in treatment depends upon early diagnosis. *If a patient complains of discharge from the rectum, never omit to examine the bowel.*

Stricture of the rectum.—Painful defæcation may be the result of stricture of the rectum. The stricture may be from cancer. Fibrous stricture of the rectum deserves especial mention in a work on diseases of women, because it is three times commoner in women than in men. There are two forms of fibrous stricture: the annular and the tubular. The *annular* is the result of pelvic cellulitis. With lapse of time

it tends to soften and to disappear. The *tubular* form consists in narrowing, and stiffening, by fibrous overgrowth, of the lower three or four inches (never more) of the rectum. This fibrous growth is a morbid change like that which when affecting the vulva and anus is known as esthiomène, or lupus of the vulva (*see* p. 309). Tubular stricture of the rectum often accompanies this disease of the vulva, which consists of fibrous overgrowth and ulceration.

Stricture is easily recognised by digital examination of the rectum. For details as to its effects and treatment, consult works on surgery.

Pruritus ani.—Eczema, or rather dermatitis, of the vulva commonly extends back to the anus, and produces itching here, as well as at the vulva. Its treatment is the same. Threadworms are generally said to cause itching about the anus, but I have known them present where there was no itching. Pruritus may be the result of any condition which causes congestion of the lower part of the rectum or discharge from the bowel. In such a case treat the condition which causes the pruritus.

CHAPTER LI

INCONTINENCE OF FÆCES

THE causes of this infirmity are : (1) Complete rupture of the sphincter ani, (2) recto-vaginal fistula. This is generally due to parturition.

Mechanism of production.—During delivery the perineum is stretched both from side to side and from before backwards. The tension on its anterior edge is from side to side, and therefore rupture here occurs in a line perpendicular to that of greatest tension ; that is, from before backwards.

When the anterior edge is stretched till it can stretch no more, it gives way, and the tear extends until by it the opening has been made large enough for the head to pass. The extent of the tear depends upon four factors. These are : (1) The *elasticity* of the tissues. (2) The *length* and *situation* of the perineum ; if the perineum is short and its anterior edge far back, less stretching will be required to let the child pass than if the perineum is long and its anterior edge far forward. (3) The *size of the child*. (4) The *suddenness* of the stretching.

Central rupture of the perineum.—The common kind of rupture of the perineum is a tear beginning at the tense anterior edge, and extending backwards, seldom in the middle line. There are less common ways in which rupture occurs. Children have been born through central rupture of the perineum without injury to either anus or fourchette.*

* *See* F. H. Ramsbotham, " Obst. Med. and Surgery."

Rupture from above downwards.—The recto-vaginal septum may be first torn through, and then this tear extend downwards through the perineum.

Results of rupture of perineum.—Complete rupture of the perineum deprives the patient of the power of retaining fæces in the rectum. Incomplete rupture of the perineum enlarges the vaginal orifice. If the patient suffers from descent of the uterus or vagina, the shortening of the perineum may make it difficult to get a vaginal pessary retained. Neither complete nor incomplete rupture of the perineum can cause prolapse of the uterus.

The operation for complete rupture of the perineum consists in making a raw surface which shall include the divided ends of the sphincter ani, and bringing these together with stitches. The raw surfaces must be so accurately brought together that union may take place by first intention. If such union does not take place, the contraction of the sphincter ani will prevent union by granulation, and the operation will be a failure. If the patient is likely to have more children, the new perineum should not be longer than a normal perineum; that is, it should not exceed an inch and a half. As little tissue as possible should be removed, so that the operation may not contract the genital canal, and thus make labour difficult. The latter condition is best complied with if the raw surface is made by splitting the recto-vaginal septum.

Instruments required :—

> Clover's crutch.
> Toothed dissecting forceps.
> Scissors.
> Four pairs of artery forceps.
> Six half-curved needles.
> Needle holder.

Large curved perineum needle in handle.
Silkworm gut.
No. 1 catgut, iodoform, Gamgee tissue.
T bandage, douche-tin, etc.

The anæsthetised patient being in the lithotomy position, make the raw surface by splitting the recto-vaginal septum from side to side, along the line A B (Fig. 144). At the ends of the line of split, cut through the skin at right angles to it, forwards and backwards, and raise up the corners thus formed by detaching them from the underlying tissue. Thus, without taking away any skin or mucous membrane, you will have a raw surface of the shape of two triangles, the base of each, C D and G H, being formed by the skin of the perineum, the sides by the mucous membrane of the vagina in front and the rectum behind, the apices being truncated and meeting in the middle line. The line A B passes through the middle of each triangle, and bisects its base ; when I speak of the middle of the raw surface, I mean this line. Having made the raw surface, take now the large curved perineum needle. Enter its point about half an inch outside B ; pass it through the recto-vaginal septum above the raw surface, so that the suture it is to carry shall be completely buried within the septum ; bring it out about half an inch outside A. Thread it with silkworm gut, and withdraw it. While passing the needle, hold one finger of the left hand in the rectum and another in the vagina, so as to be sure that the needle is traversing the recto-vaginal septum. The object of this silkworm gut stitch is to support the parts, and prevent strain from being thrown on the catgut stitches which are to hold the raw surfaces in apposition. Seize each end of the silkworm gut stitch with pressure forceps, and let them hang down out of the way. Now take half-curved needles threaded with catgut. Enter the first stitch at the

junction of the rectal mucous membrane and raw surface, close to the apex of the triangle, and bring it
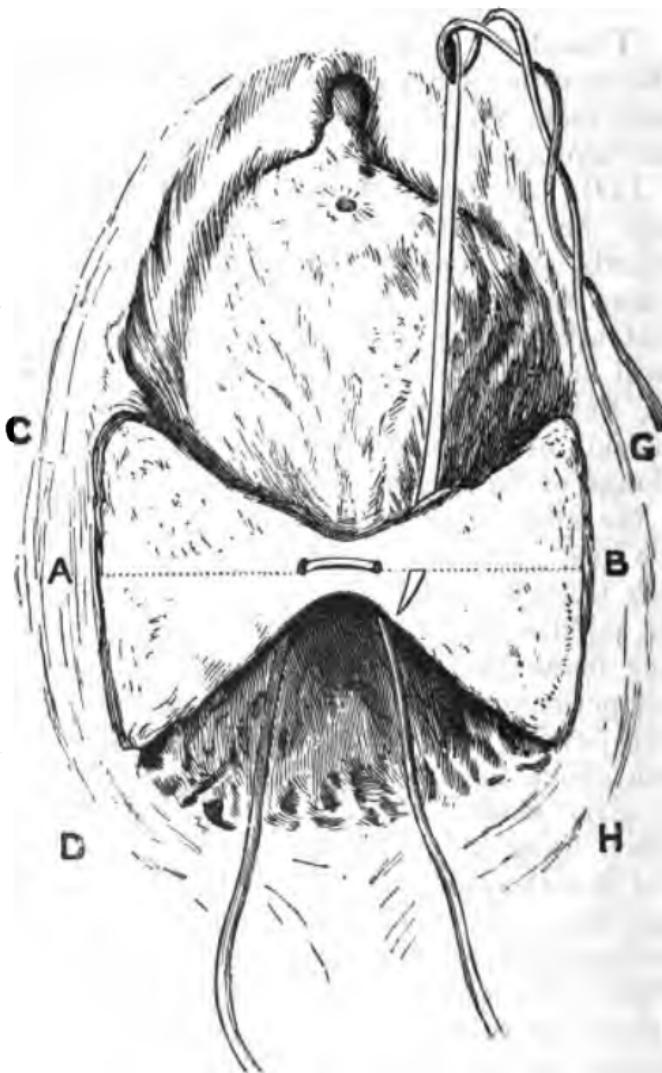
Fig. 144.—Repair of ruptured perineum. (*Drawn by Dr. W. Ambrose Kibbler.*)

out at the middle of the raw surface. Enter it again at the middle of the raw surface on the opposite side,

and bring it out as close as possible to the junction of
mucous membrane and raw surface. Tie this suture,
grasp its ends with forceps, and let them hang down
out of the way. Put in the second suture at the
junction of vaginal mucous membrane and raw sur-
face, bring it out at the middle of the raw surface,
nearer the base of the triangle than the first suture ;
enter it at a corresponding point in the middle of the
raw surface on the opposite side, and bring it out as
close as possible to the junction of vaginal mucous
membrane and raw surface. Then tie it. (The dia-
gram shows the first stitch passed, but not tied, and
the second stitch being put in. This is for the sake
of pictorial clearness, but it is better to tie each
stitch before putting in the next ; and it is con-
venient not to cut off the ends at this stage, because
by them the part can be pulled upon if wished.) The
third suture is entered between the rectal mucous
membrane and the raw surface, still nearer the base
of the triangle, and so on, sutures being entered alter-
nately from the rectal and vaginal aspects, until
the whole of the raw surface has been brought into
apposition by a row of vaginal and a row of rectal
stitches. Take care that the stitches do not over-
lap. Tie the deep silkworm gut suture so as to press
the raw surfaces together and support the catgut
stitches. Complete the apposition by transverse
stitches going through the skin of the perineum.
Cut short the ends of all the catgut stitches ; leave
those of the silkworm gut stitch about an inch long.
Powder the part with iodoform, apply a pad of
Gamgee tissue, and keep it in place with a T bandage.
Let the nurse wash the rectum out twice a day for
a fortnight. The patient may pass urine naturally if
she can ; if not, she must be relieved by the catheter.
I think it is better to have her knees tied together ;
this lessens the strain on the stitches. Take out the

silkworm gut stitch at the end of a week. Leave the catgut stitches to be absorbed.

Recto-vaginal fistula—that is, an opening between the rectum and vagina—is generally the result of incomplete union of rupture of the perineum, the lower part of the rent healing, the upper not. These fistulæ are seldom large. A recto-vaginal fistula permits the escape of fæces and flatus involuntarily from the rectum into the vagina. It can be cured by a plastic operation, and in no other way. If small and easily got at, or high up, it will be best to pare its edges and bring them together with wire sutures and coil and shot. If large and low down, it may be better to cut through the part of the recto-vaginal septum which is below the fistula, and then perform the same operation as for ruptured perineum.

PART XI.—ABDOMINAL TUMOURS

CHAPTER LII

OVARIAN TUMOURS

Ovarian new growths.—The ovary is remarkable for the variety of its new growths, and the various combinations of different kinds of new growth. Ovarian tumours may be broadly classified into five groups :—

1. Simple, or unilocular, cysts.
2. Multilocular cysts.
3. Papillomatous cysts.
4. Dermoid cysts.
5. Malignant tumours.

Each of these groups has definite distinctive characters. But between them are found transition forms. In describing these tumours I shall begin with the simplest, and as I pass from one to another I shall point out the transition forms.

The origin of ovarian tumours.—The ovary is full of Graafian follicles (Fig. 145). These ought to burst and let out the ova. If one should not burst, but go on getting bigger and bigger, it will form a large tumour. If two or three should go on enlarging instead of bursting, then we shall have a tumour composed of more than one compartment. This is a simple and natural way of explaining the development of ovarian tumours.

Why ovarian tumours develop.—We know nothing as to the causes of ovarian tumours, except that they are least common in women who have many children : most common in women who have no children.* We cannot predict nor can we prevent them.

Simple ovarian cysts.—It is impossible to draw a line which all will accept as correct between
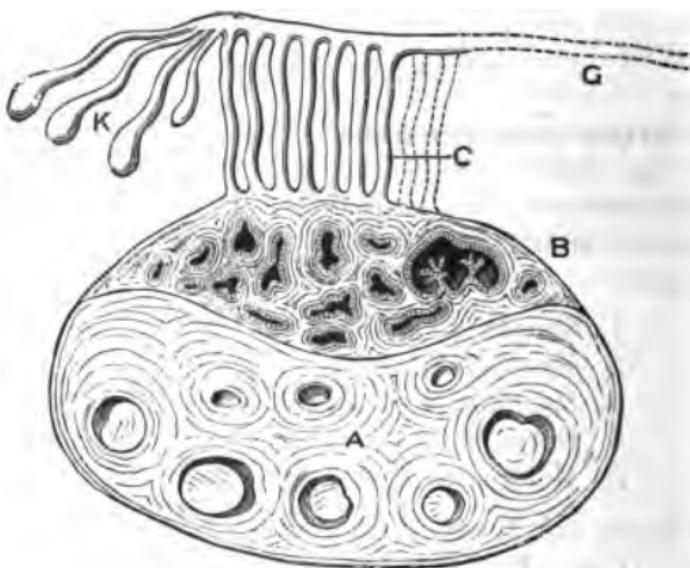
Fig. 145.—Diagram representing the cyst regions of the ovary.
(*After Bland-Sutton.*)

A, Oöphoron, or egg-bearing portion of ovary ; B, para-oöphoron, or hilum of ovary ; C, parovarium ; K, Kobelt's tubes ; O, Gartner's duct.

a dropsical follicle and a cyst. Simple ovarian cysts are never large. In cysts much larger than a hen's egg, careful examination will generally detect smaller cysts in their walls. Small simple cysts are, so to speak, young cysts, and therefore degenerative and inflammatory changes are rare in them. Their wall is

* *See* Sir J. Williams, *Brit. Med. Journal*, July 10, 1897.

thin, greyish, often translucent. They are lined with columnar epithelium. The fluid they contain is serous, seldom blood-stained or colloid, of specific gravity from 1005 to 1020. The ovary is either attached by its edge to the cyst, or spread out over part of the cyst.

Lutein cysts.—Some cysts are lined with yellow matter, like that of the corpus luteum. These are called lutein cysts ; they are seldom large.

Simple ovarian cysts, as a rule, give no trouble. Sometimes they cause dull aching pain, which brings the patient for treatment. As they are seldom adherent, their removal is easy and attended with hardly any danger.

Papillary adenomatous growths in simple ovarian cysts. — Very rarely, small papillary adenomatous growths are found in simple ovarian cysts believed to be dropsical Graafian follicles.

Tubo-ovarian cysts.—A tubo-ovarian cyst is one formed of an ovarian cyst which communicates with a dilated Fallopian tube. Tubo-ovarian cysts are seldom larger than a child's head. Two processes are necessary for their formation : (1) adhesion between tube and ovary ; (2) perforation of the cyst wall. The uterine end of the tube, whether absolutely sealed or not, is practically blocked, or else the fluid would escape by the uterus. In some reported cases it is said to have done this. The folds of the distended tube are effaced by the distension, and its epithelium may have been destroyed.

Multiple dropsical follicles; Rokitansky's tumour.—There is a rare kind of tumour, in which the ovary may get as big as a child's head, but is enlarged not by the size of the cysts, but by their number. The tumour is made up of little cysts, most of them about the size of a cherry, or smaller : These are all closely packed together, and flattened

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by mutual compression. In these little cysts, ova can be found. In the few specimens of this tumour that have been removed both ovaries were similarly diseased.

The simple ovarian cyst and Rokitansky's tumour represent the earliest stages of tumour development from the egg-bearing part of the ovary.

Parovarian, or simple broad ligament cysts.—The parovarium (Fig. 146) consists of about
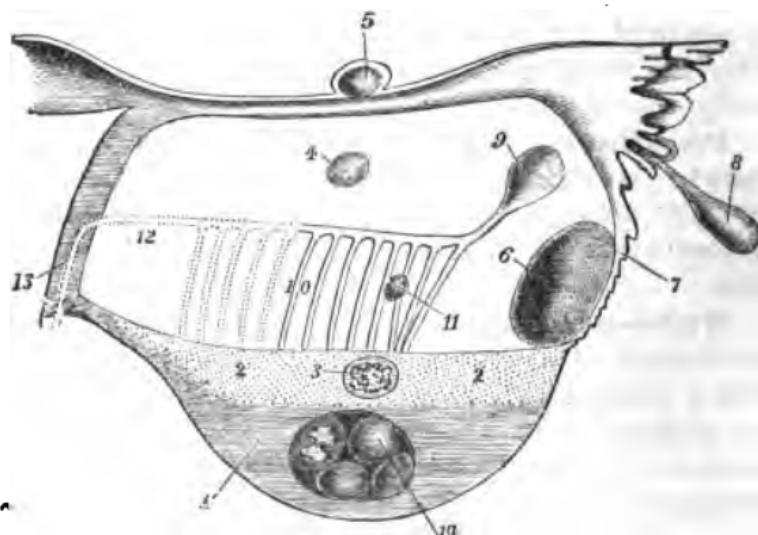
Fig. 146.—Diagram of the structures in and adjacent to the broad ligament. (*After Doran.*)

1, Parenchyma of ovary, seat of 1a, glandular or multilocular cyst; 2, hilum, with 3, papillomatous cyst; 4, broad ligament cyst, independent of parovarium and Fallopian tube; 5, similar cyst in broad ligament above the tube, not connected with it; 6, similar cyst developed close to 7, ovarian fimbria of tube; 8, hydatid of Morgagni; 9, cyst developed from horizontal tube of parovarium; 10, parovarium, the dotted lines representing portions obsolete in the adult; 11, small cyst developed from a vertical tube; 12, duct of Gartner; 13, track of Gartner's duct in uterine wall.

eight or ten fine tubes, running vertically to the long axis of the ovary, and entering the para-oöphoron, or hilum of the ovary. These tubes are the remains of the Wolffian body. Their ends remote from the

ovary are joined by a horizontal tube, running parallel
with the long axis of the ovary, inwards towards the
uterus.   This is called the duct of Gartner.   Cysts
called *parovarian cysts* are believed to develop out
of these vertical parovarian tubes (Fig. 147).   They
are also called *simple broad ligament cysts* (*see* Fig.
146).   Handley * has shown that some of these
cysts are dilated accessory Fallopian tubes.   There is
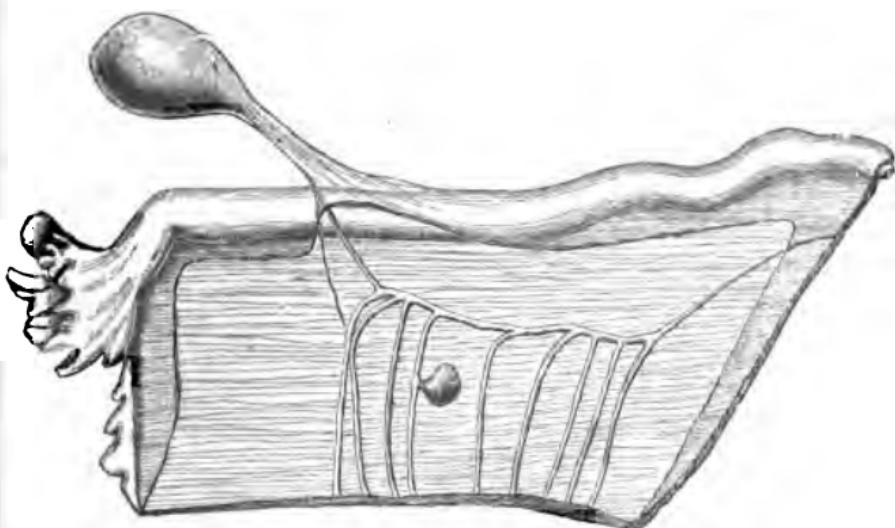
Fig. 147.—Left broad ligament, from nature. (*After Doran.*)

Its posterior layer has been removed. The duct of Gartner is distinct.
A cyst is developed from one vertical tube. A larger cyst is con-
tinuous by a thin cord with the horizontal duct.

reason also to think that some small broad ligament
cysts are dilated lymphatics.

Morbid anatomy.—The distinctive marks of these
tumours are : (1) The ovary is usually attached
to the side of the cyst (Fig. 148).   (2) The Fallopian
tube is stretched across the top of it, and if the tumour
is large the tube is elongated and the mesosalpinx
thickened. (3) The peritoneum is easily stripped

* *Obst. Trans*, 1903.

off. (4) The fluid is clear, limpid, straw-coloured, of specific gravity 1010 or less. (5) These tumours are generally unilocular. They are, when small, lined with columnar epithelium; but when larger, this becomes first stratified from pressure, and then atrophied. Their fluid contains albumen; they are often big enough to hold several pints of fluid, but do not get so big as some other tumours.

Fig. 148.—Simple broad ligament cyst, in the opinion of Doran; but by some called parovarian. From nature. (*After Doran.*)

Clinical features.—It is probable that if let alone they would reach a certain size and then cease growing. When such a cyst is burst or tapped, or its fluid escapes into the peritoneum during operation, the patient is none the worse. These tumours are seldom adherent. They affect not the general health, and they cause not ascites nor œdema of legs. It follows that their operative removal is attended with hardly any danger. Some have a pedicle as easy to secure as that of an ovarian cyst. Some have to be

enucleated. This is generally easy, and the bleeding trifling. These tumours never recur.

Multilocular cysts.—Next in point of inno-cency are the *glandular multilocular cysts, or multi-locular adenomata*. These tumours consist of a big cyst with many little cysts (Fig. 149). The larger
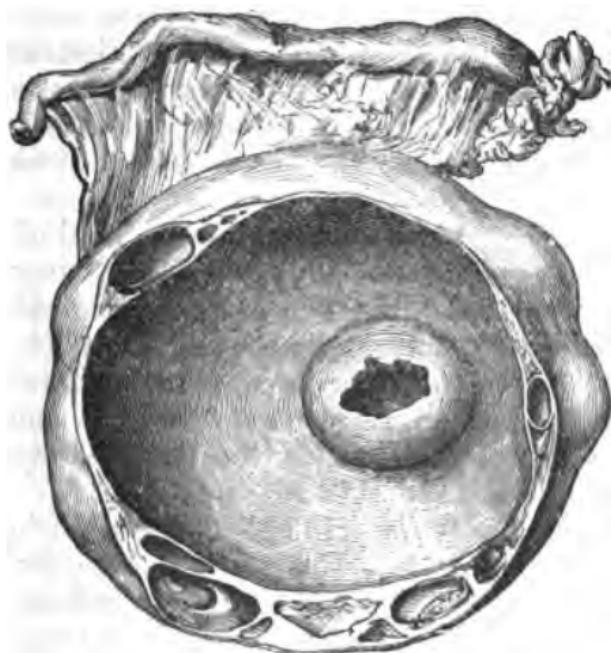
Fig. 149.—Small multilocular ovarian cyst. (*From a specimen in the Museum of the Royal College of Surgeons—Pathological Series, No.* 275. *After Doran.*)

of the small cysts contain other cysts bulging into them. The big cyst usually shows evidence of other cysts having burst into the main one, so that their cavities come to form one cavity. The conjunction of two cysts is marked by a fibrous ring of constriction in the interior of the big cyst. The little cysts have thin and translucent walls. The wall of the big cyst is generally tough and

opaque from fibrous tissue ; and on the outside pearly white, glistening. The small cysts are lined inside with columnar epithelium ; in the bigger ones this is flattened out by pressure into pavement epithelium ; and in the largest the lining epithelium may be atrophied. Sometimes on the inside of the big cyst there are shining flakes of cholesterine, and sometimes calcareous granules and flakes. These latter are degenerative changes which indicate slow growth. Often the wall of the cyst is dotted or streaked with ecchymoses, and sometimes with yellow or brown spots or patches, from the decolorisation of old effusions of blood.

The contents of ovarian cysts.—The fluid of multilocular cysts is colloid ; that is, gummy, slimy, tenacious. It is generally thickest in the smallest cysts, and in them is pearly grey. Its specific gravity varies from 1015 to 1050. In large tumours mixture of blood, according to its quantity and the length of time since its effusion, makes the fluid yellow, green, brown, reddish, or blackish.

Clinical characters.—Multilocular ovarian tumours never stop growing. There is no cure for them but their complete removal by operation. The fluid they contain is very slightly irritating to the peritoneum. Hence if during operation some of it gets into the peritoneal cavity, no harm follows. If they burst, in the course of weeks some injection and thickening of the peritoneum leading to adhesions may be produced, but no grave symptoms. If the opening in the cyst heals, it will refill and get bigger. If the opening does not close, the cyst goes on pouring out fluid into the peritoneum, which will recur indefinitely if it is treated by tapping only. Multilocular cysts cause inflammation by their pressure. Hence adhesions are often present when the tumours are large, but seldom when they are small. They

cause not ascites, and œdema of legs only when they are very big. When they interfere with exercise, appetite, and sleep, or cause pressure symptoms, they interfere with nutrition, but not till then. When completely removed, they never recur. But if a bit of the tumour be left behind, either in the pedicle or attached to a viscus or to the abdominal wall, it will go on growing.

Sessile, thin-walled, colloid cysts.—There is a rare tumour which was described by Lawson Tait.* The cysts are sessile in the pelvis ; the cyst walls are very thin, and the contents viscid and tenacious. I have met with one such case. The operation seems difficult, from the impossibility of getting out the cyst and securing the pedicle. But if Tait's view be correct, it is not necessary to get out such a cyst. He regarded these as ovarian tumours undergoing spontaneous cure, in which, if they could be diagnosed, operation would be unnecessary ; if let alone the peritoneum would probably digest the cyst contents. The practical fact remains : in such cases remove as much of the gluey stuff as you can, and do not trouble about the cyst wall.

Glandular multilocular cysts. — In some multilocular cysts there is not only a lining of columnar epithelium, but this contains glandular acini, lined with regular columnar epithelium (Fig.. 150). Such a lining membrane is histologically a mucous membrane. Such cysts are called glandular or adenomatous multilocular cysts. In some such cysts hairs are present. These cysts form a transition between ordinary multilocular cysts and ovarian dermoids.

Papillary adenomatous growths in multilocular cysts.—In some cases papillary growths, composed of adenomatous tissue, project into the interior of some of the loculi of multilocular cysts ; these

* *Lancet,* May 16th, 1896.

cases form a transition between the multilocular
and papillary tumours.

Papillary tumours.—It is generally believed
that these spring from the para-oöphoron (Fig. 145) ;
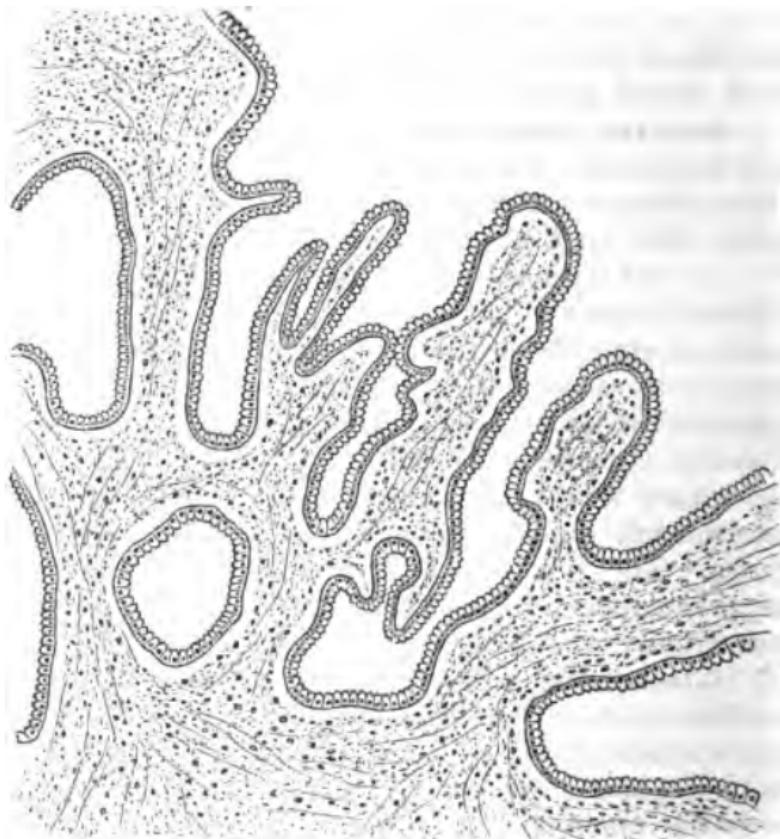
Fig. 150.—Section of the wall of a loculus from a glandular multi-
locular tumour, showing adenomatous growth. (*After Bland-
Sutton.*)

that the cysts are developed from the tubes of the
parovarium.   These cysts are lined with ciliated
epithelium, but in the large cysts this epithelium may
become altered from pressure. They contain thin,
cloudy, serous fluid. They are generally multilocular.

About half of them grow between the layers of the broad ligament, instead of having a narrow pedicle and rising up out of the pelvis. Therefore they often cause pressure symptoms early. They contain papillary growths. These grow rapidly, break down easily, and bleed readily. Often they contain small,
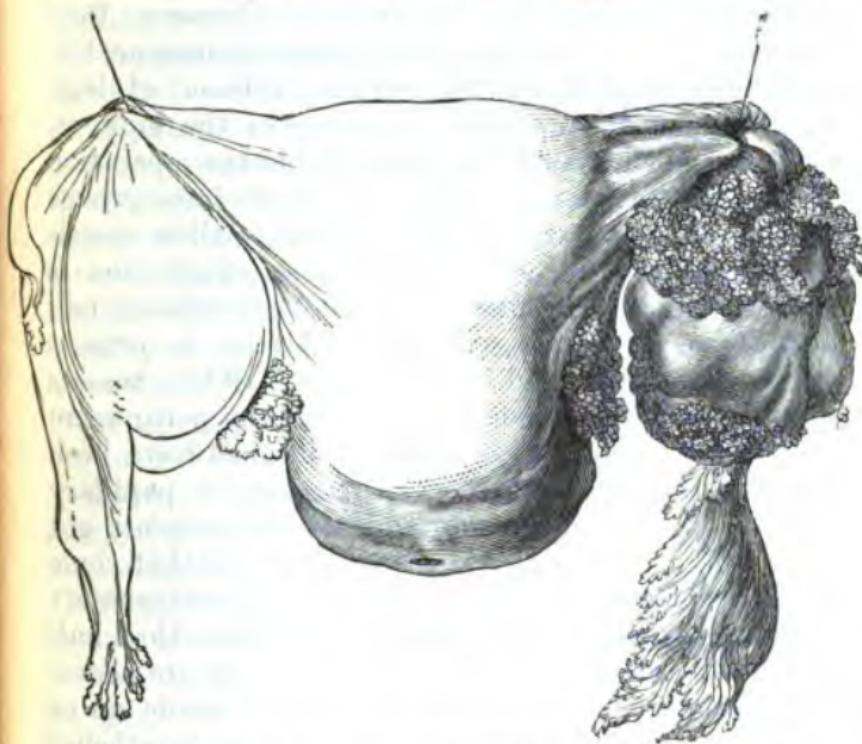
Fig. 151.—Bilateral ovarian papillomatous growths. Papilloma on the surface of the ovaries. (*After R. Barnes, from a specimen in the Museum, University College Hospital.*)

gritty particles like grains of sand, therefore called *psammomata*. In about a third of such cases, these papillary growths are adenomata. There are often papillary growths outside as well as inside the cyst (Fig. 151). Adenomatous papillary growths do not invade adjoining tissues, cause metastatic growths,
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produce cachexia, or recur after extirpation. They are often bilateral.

There is no way of distinguishing adenomatous papillary growths from carcinomatous or sarcomatous, except by microscopic examination (Fig. 150).

Clinical features.—These tumours are seldom as large as the multilocular tumours, because they early cause pressure symptoms, such as uterine hæmorrhage, pain down the thighs, œdema of legs, dilatation of the ureters and pelves of the kidneys, ascites. Intraligamentous growth makes operation difficult. Their enucleation often causes hæmorrhage from many points on a surface too firm to allow vessels to be picked up and tied. Because enucleation is difficult, bits of the tumour are apt to be left behind ; and if so, these bits will grow. Ascites is present in the majority, and occurs early. When masses of papilloma are found growing from the peritoneum the usual ending is in death. But cases have been watched in which there were masses of papillary growth on the peritoneum, and yet the patients got quite well. The explanation seems to be that some papillary growths are adenomata, some carcinomata.

Carcinomatous papilloma.—More than half of ovarian tumours with papillary growths are *adenocarcinomatous ;* that is, the growths are made up of glandular acini, which contain heaped-up epithelial cells of irregular sizes and shapes. These give trouble so soon that they are seldom bigger than a man's head. There are often growths outside as well as inside, which break down easily. These tumours in most of the cases are bilateral. They grow more quickly than adenomata, and as they grow they tend to displace adjoining parts. They cause cachexia and great ascites. In about a third of them secondary growths are present in the peritoneum. Metastatic growths also occur.

Clinical features. — The results of operation for these tumours are unfavourable. Even when the tumour is small and is completely removed, recurrence may take place within a year. From these tumours papillary outgrowths may grow through the base of the cysts into the broad ligaments, thereby making complete removal of the tumour impossible.

Ovarian dermoids.—Dermoids are " tumours furnished with skin or mucous membrane occurring in situations where these structures are not found under normal conditions." That which is peculiar to the ovary is the extraordinary power of growth which ovarian dermoids have, in common with other ovarian tumours, so that in it cutaneous structures are produced in number and variety not known elsewhere. Hence ovarian dermoids are now classed as teratomata.

Anatomical characters. — Ovarian dermoids may be lined with skin throughout, or only over a very small area. The skin may be bald, or it may have hair, sebaceous glands, sweat glands, mammæ, mammæ without nipples and nipples without mammæ. There may be teeth (as many as 300 have been found in one cyst), muscle, bone, horn, nails ; very rarely brain-like tissue. Although there are these tissues, no properly formed organs ever occur in dermoids. Ovarian dermoids may grow very big ; one has been recorded weighing 160 lbs.

The cavity of a dermoid cyst is generally filled with fluid fat, which, when it has had time to cool, becomes solid like butter. In a few cases the fat is in little round pellets ; this probably (as Doran * has suggested) depends upon some peculiarity in the chemical composition of the fat ; at least its melting point is higher. The wall of a dermoid is generally thick : it does not commonly show

* *Obst. Trans.,* vol. xxxvii.

the pearly lustre of a multilocular cyst. It is composed of fibrous tissue, and between this and the skin which lines the cyst there is often cellular tissue with fat. Dermoids are generally unilateral.

Clinical features.— Dermoids grow slowly; but we cannot distinguish, while it is in the body, a dermoid from tumour of another kind, and a dermoid may cause danger even if it be not getting bigger. In childhood dermoids are the most frequent kind of ovarian cyst, though the majority of dermoids are found in adults. Dermoids have been found in the peritoneal cavity when the ovaries were healthy. They have also been met with in the cellular tissue of the pelvis under the peritoneum.

Dermoids suppurate more often than any other kind of ovarian cyst. This probably depends upon their slowness of growth, which makes them stay long in the pelvis, where they are liable to bruising during childbirth. Therefore it is well, if possible, to remove dermoids entire, without tapping them.

Dermoids, when inflamed, become adherent in the pelvis, and may point and burst, or be opened because the swelling is taken for an abscess. If the dermoid burst externally (a rare event) or is opened, the patient will be left with a sinus which will go on discharging for the rest of her life. If it burst into the bladder, it will set up and maintain cystitis. If into the rectum, irritation of bowel will be continuous. If into the vagina, and the cyst be emptied of hair and any pedunculated masses that it may contain, it will contract, and although it will continue to discharge, this will not be distinguishable by the patient from "whites." If the cyst be large and contain solid contents which prevent it from contracting, the discharge may exhaust the patient by hectic, or lead to lardaceous disease. The troubles which in these ways

result from a suppurating dermoid can only be cured by removal of the cyst.

Practical rules as to ovarian cysts.—When an ovarian tumour has been discovered, there should be no delay in its removal.

Secondly, when operating, always examine a tumour before you tap it. If it has not the pearly lustre of a multilocular cyst, if its wall is very thick, if solid lumps can be felt in it which do not look like secondary cysts, if it is intraligamentous and partly solid, do not tap it. Enlarge the incision and remove the tumour unopened.

Thirdly, in all ovariotomies on patients so old that their ovarian function is at an end, both ovaries should be removed.

Solid ovarian tumours. — Only between 1 and 2 per cent. of ovarian tumours are solid. Solid tumours do not get so large as the cystic, and they more often preserve the natural shape of the ovary, and are less often adherent. They often have broad pedicles. The solid tumours of the ovary are fibroma, myoma, sarcoma, and cancer.

Fibroma of the ovary.—This is rare. Many of the old cases put on record as ovarian fibroids were probably sarcomata. An ovarian fibroid is difficult to distinguish, unless carefully examined before removal from the body, from a uterine fibroid the attachment of which has become long and slender. Nevertheless, cases have been published in which it was indubitable that the tumour was ovarian, and composed of white fibrous tissue ; and some of these tumours were large.

A fibroid tumour of the ovary may affect the whole ovary or only part of it. In the latter case it forms a hard, rounded, smooth nodule or bundle of nodules, sharply defined, but closely attached to the ovarian tissue. It may be polypoid. The remainder of the

ovary is generally indurated, with few follicles. The fibroid is composed of white fibrous tissue, with a few smooth muscle fibres, interlacing without definite order. They have few vessels. A few cases have been described in which fibroids seem to have grown in the corpus luteum.

Degenerations.—Ovarian fibroids sometimes contain cavities filled with pulpy broken-down tissue, but without epithelial lining. They may contain dropsical follicles and they may calcify.

Clinical features.—Ovarian fibroids are more frequent, in proportion to cystic growths, in children than in adults. They are often associated with ascites, which does not return after the tumour has been removed. The ascites often leads to the discovery of the tumour. They are seldom distinguished before operation from other tumours which clinically resemble them. They are rarely bilateral.

Patenko's bodies. — Small, round, fibrous nodules, formed out of burst or atrophied follicles, are found in the ovaries, and are called *Patenko's bodies*, after their describer. They indicate retrogression ; sclerosis, not growth. Tumours never develop from them.

Myoma of the ovary is a solid ovarian tumour composed of unstriped muscular fibres. Clinically, ovarian myomata cannot be distinguished from other solid ovarian tumours. Myomata do not recur.

Sarcoma of the ovary.—Sarcoma of the ovary is generally spindle-celled. Some of these tumours contain fibrous tissue ; these are called fibro-sarco-mata. In some papillomata the growths consist of gland tissue mixed with sarcomatous tissue. These are called adeno-sarcomatous papillomata. Some sarcomata contain glandular tissue near the hilum, and therefore are called adeno-sarcomata.

Ovarian sarcomata are generally smooth on the surface, though papillary growths have been seen. On section they are red. In their older parts these tumours are liable to fatty degeneration, marked by yellow points, coalescing into lines and then breaking down into cavities. Tumours containing many such cavities have been called cysto-sarcomata.

Clinical features.—Sarcoma of the ovary is especially frequent in the young. These tumours are often bilateral. There is often ascites. Sarcoma of the ovary does not cause peritonitis, nor adhesions, till it reaches a great size. Secondary growths often do not occur till late. Hence, except when very large, the removal of sarcoma of the ovary is generally easy.

Cancer of the ovary.—Cancer of the ovary is fortunately less common than cystic disease. If we take all cases in which at some part of a cystic tumour there is a little growth showing the microscopic structure of cancer, then cancer of the ovary is common. Solid tumours composed entirely of cancer are less common, and may be either primary or secondary ; more often the former. Cancer of the ovary is often bilateral. Such a cancer forms an uneven lump, which on section shows a dirty-white marbled appearance, and is easily broken down.

Clinical features.—Cancer of the ovary is proportionately more frequent in the young, below twenty, and the old. Ascites develops while the tumour is yet small, and recurs if the belly be tapped. Œdema of the legs occurs early, but not so soon as ascites. Later there is cachexia.

The only treatment is to make an exploratory incision. If the tumour is limited enough to be removed, and no secondary growths are found, it should be removed, even though the naked-eye characters suggest that it is cancer ; and knowing that cancer

is often bilateral, the other ovary should also be taken away.

Peritoneal growths secondary to ovarian tumours.—If a multilocular cyst is incompletely removed so that a little cyst or cysts be left, such a bit of the tumour may grow and form a second tumour as big as the first. If a papillomatous cyst bursts, or is tapped, little bits of papillary growth are apt to be broken off. These may grow like the parent growth. In some cases the abdomen has been opened and a papillomatous cyst with many secondary growths on the peritoneum has been found. The cyst has been removed, the growths on the peritoneum being left. In some cases the patient has remained well for years. The explanation is that the growths were non-malignant adenomata. In other cases the peritoneal growths are malignant; they go on growing, and cause death.

Myxoma of the peritoneum.—In this disease the belly contains jelly-like masses of myxomatous tissue; similar masses, some looking like cysts, adhere to the peritoneum covering the bowels. The only treatment is to open the belly and remove the myxomatous stuff, and the sooner this is done the better the prospect. Adhesions have to be torn through, and there is therefore danger of bleeding, and also of the subsequent oozing into the belly which favours the multiplication of microbes. One-third of the recorded cases have followed rupture of ovarian cysts.

Ovarian tumours are liable to accidents, viz. :—

1. **Hæmorrhage into ovarian cysts.**—The frequency with which the fluid of large ovarian cysts is found coloured by admixture of blood shows that slight hæmorrhage into cysts is common. Probably when one cyst bursts into another the vessels in the septum bleed a little. Papillary growths are prone to bleed. Great intracystic bleeding has been caused by

tapping. This is one of the reasons why you ought not to tap an ovarian tumour. Great bleeding into a cyst is recognised by sudden onset of (1) pallor, small quick pulse ; (2) absence of external hæmorrhage ; (3) pain in belly, with enlargement of tumour, which is hard, tense, round.

2. **Suppuration of ovarian cysts.**—This is caused by micro-organisms. Sometimes it is easy to say how they got in, as when a cyst is tapped with a dirty trocar. Suppuration without known injury is especially common in dermoids. It is supposed that microbes may penetrate them from the bowel, on account of the frequency with which suppurated cysts are found closely adherent to bowel. The reason may be that dermoids remain stationary in size, and lodged in the pelvis, for such long periods.

Suppuration of an ovarian cyst is sometimes marked by a rigor or rigors, followed by hectic fever and wasting. Until the peritoneum is involved there is little or no pain ; but when the tumour has become adherent there is often severe pain. Absence of fever is no proof that a tumour is not a suppurated cyst.

The physical signs are those of perimetritis with a large lump. The only cure is removal.

3. **Twisting of the pedicle.**—This occurs in about 9 per cent. of tumours. One cause is the alternate filling and emptying of the rectum. The rectum when full pushes forward one side of the tumour. When the bowel is empty the tumour does not go back, but the rectum comes to lie against a different place, and pushes this forward next time it fills ; and thus by many small movements rotation is produced. It is proportionately more frequent in dermoids than in any other kind of tumour. Changes in the position of the body, sudden or prolonged exertion, leading to pressure on the tumour, may alter its position and twist its pedicle. During examination, a mobile

tumour may easily be rotated. In pregnancy, the
pressure of the growing uterus on an ovarian tumour
may turn it round ; and still more easily may this be
done in the manipulations of the belly which follow
delivery. The essential condition is mobility, which
usually implies smallness, of tumour.

There are two stages in the growth of ovarian
tumours. In the first stage they are pelvic and lie
behind the uterus, the pedicle of the tumour being
in front. In the second they rise into the abdomen,
and then the pedicle comes to lie behind the tumour
and to be twisted.

Effects of pedicle twisting.—The vessels in the
pedicle are compressed. The veins, having thinner
walls, are sooner blocked than the arteries. Hence
the return of blood from the tumour is hindered,
pressure within the veins behind the obstruction
increased, and vessels give way and bleed into the
cavity of the cyst, into the cyst wall, and into the
pedicle on the distal side of the twist. The ulti-
mate effects depend upon the suddenness and the
degree of the obstruction to the circulation.

The following results may happen :—

(1) Enough blood may be poured into the cyst
to kill the patient ; or the cyst may burst, and bleed-
ing go on into the peritoneal cavity till the patient dies.

(2) Venous congestion of the cyst wall and pedicle
may make these tissues thick, soft, greyish, liver-
coloured, or black, according to the amount of extra-
vasated blood with œdema. From this it follows
(*a*) that when the surgeon removes the tumour he
may find the pedicle break down under the ligature;
(*b*) the circulation through the pedicle may stop; the
tumour may become inflamed, adhesive lymph con-
nect it to surrounding parts, new vessels form in the
adhesions and nourish the tumour, and the tumour
may become detached from its original pedicle.

. (3) A less degree of twisting may narrow the arteries and lessen the amount of blood going to the tumour, which may in consequence cease to grow.

(4) The next effect is peritonitis.

(5) Extensive adhesions to bowel may lead to the entry of micro-organisms and to suppuration of the tumour.

(6) A tumour with a twisted pedicle which has become adherent to bowel may be again moved, the bowel as well as the tumour may be twisted, and intestinal obstruction follow. Twisting of the pedicle has been known so to tether a tumour down on the pelvic brim that pressure on the bowel caused obstruction.

(7) A few months' dysmenorrhœa has been observed to precede sudden pedicle twisting.

(8) Lastly, a twisted pedicle may become spontaneously untwisted.

Twisting of the pedicle thus endangers life in three ways : (a) by internal hæmorrhage ; (b) by peritonitis ; (c) by exhaustion from suppuration.

Diagnosis of pedicle twisting.—If a patient who has an ovarian tumour is suddenly taken ill, with pallor, small quick pulse, but no external bleeding, and the tumour becomes larger and tense ; and if, after such symptoms, those of peritonitis develop, you may infer twisting of the pedicle. If there is reason to think that pedicle twisting is present, the tumour should be removed with as little delay as possible.

4. **Rupture of ovarian cysts.**—They may rupture either spontaneously or from external violence. It is commoner in small cysts because their walls are thin. Rupture may also take place from thrombosis, fatty degeneration, or sloughing. It may be caused by hæmorrhage into the cyst. Sup-

puration may lead to bursting. Such bursting is usually into a mucous cavity, generally bowel.

When papillomatous growths within a cyst grow up to and perforate its wall, the opening is small, so that no symptoms accompany its formation ; but it allows leakage from the cyst and infection of the peritoneum by particles of growth.

The diagnosis of rupture of an ovarian cyst can only be made by finding that the tumour has disappeared. Confirmation will be given if there are signs of internal hæmorrhage, of peritonitis, or discharge having recognisable characters (colloid, fatty stuff, hair) from bowel, vagina, or bladder.

CLINICAL HISTORY OF OVARIAN TUMOURS

Early symptoms.—Ovarian tumours are generally found out when the patient notices that her belly is enlarging, not before. Ovarian tumours, except malignant ones, do not affect menstruation.

When ovarian tumours are large enough to cause symptoms, these are of three kinds :

1. **Pressure symptoms,** mechanically produced as the tumour gets bigger. Ovarian tumours cause pressure symptoms in one of two places : (*a*) the pelvis, and (*b*) the abdomen. (*a*) A tumour incarcerated below the sacral promontory may produce, first, frequency of micturition, and then retention of urine. It may press on the *rectum*, obstruct, and cause straining at stool. It may press on *sacral nerves*, and thus cause pain down the thighs, and on *vessels* in the pelvis, so producing œdema of vulva and vagina. (*b*) When the tumour has become larger than a uterus at the full term of pregnancy, it presses on the *stomach*, and causes discomfort after food, and perhaps vomiting ; also on the *diaphragm*, and makes the patient short of breath, and subject to palpitation ; it causes œdema of the legs, vulva, and lower abdominal wall : it also leads to a condition of kidney like that found in chronic heart disease. Hydronephrosis has been observed, but is rare. Umbilical *hernia* is another occasional consequence. The stretching of the *skin* leads to the formation of atrophic lines in it.

2. The complications of ovarian tumours lead to symptoms. The most frequent is peritonitis. The absence of any history like that of inflammation within the belly is no guarantee that adhesions are not present. When the tumour reaches into the upper half of the belly it presses continuously upon parts in contact with it. In front, it is either in contact with the abdominal wall or separated from it only by omentum. Hence the most common adhesions of ovarian tumours are with the omentum. As the tumour enlarges, adhesions form between the tumour and other abdominal viscera. The effect of adhesions in causing operative difficulties has been alluded to. There are other effects. (*a*) *Pain.* Slight local peritonitis is often, but not always, without symptoms. Extensive inflammation is attended by the usual symptoms of peritonitis. (*b*) When the bowel has become adherent there is risk of *intestinal obstruction*. It is rare, but always possible. (*c*) If a tumour becomes adherent in the pelvis it may press upon the rectum or bladder, just as a tumour may which is incarcerated below the sacral promontory.

3. Indirect effects.—Ovarian tumours, when large, produce *indirect* symptoms. (*a*) The interference with digestion may prevent the patient from digesting enough food, and if so, or if there be much vomiting, she will waste. (*b*) Discomfort may prevent sleep, and thus lead to nervous exhaustion. (*c*) The size of the patient's belly may prevent her from taking exercise, and long inaction may bring about fatty degeneration of the heart and other organs.

Ovarian tumours and pregnancy.—An ovarian tumour of any kind may complicate pregnancy. Cases in which pregnancy is complicated with ovarian tumours show a larger proportion of dermoid cysts than occurs apart from pregnancy.

There are three reasons for this : (1) Dermoids are especially frequent in young subjects. (2) Dermoids grow more slowly, hence the period through which a patient with a dermoid incurs the risk of pregnancy is longer than is the case with a patient who has a faster-growing tumour. (3) Dermoids remain long in the pelvis. If the egg-bearing tissue has been lifted high in the abdomen by a large tumour, the ovum is less likely to get into the Fallopian tube than if the tissue from which it came were in the pelvis.

Consequences of pregnancy with an ovarian tumour.—Pregnancy leads to faster growth of an ovarian tumour, if present. When an ovarian tumour and pregnancy are present together pressure symptoms are more severe. The tendency to abortion in pregnancies complicated by ovarian tumours is no greater than in pregnancies without them.

Labour with an ovarian tumour.—If the tumour is in the pelvis it will get in the way of the fœtus, and obstruct delivery. If in the abdomen, and large, it may push the uterus to one side, thus making its axis oblique. During delivery the tumour may be squeezed between the head and the pelvis. This may burst it, or cause hæmorrhage into it, or make it suppurate.

These bad effects may follow, yet they are not the rule. In most cases of pregnancy with ovarian tumour the mother goes through childbirth and child-bed without important injury.

Treatment of pregnancy with an ovarian tumour.—The proper treatment of an ovarian tumour complicated by pregnancy is its immediate removal. Ovariotomy must be done. The presence of pregnancy little, if at all, increases the danger. Tapping is only proper if conditions are present unfavourable to ovariotomy, and yet immediate relief

is wanted. The induction of premature labour is only proper if the tumour is malignant and its extirpation impossible, for then, by eliminating the pregnancy, the rate of growth of the tumour may be slackened.

When an ovarian tumour is pressed by the fœtal head down into the pelvis, the first thing is to push it up out of the true pelvis. Open the abdomen, press the uterus to one side, thus lifting the child's head out of the pelvis into an iliac fossa, and then let an assistant press the tumour from the vagina up out of the pelvis. Then remove it as in any ovariotomy. I have done this during the second stage of labour. Some think the best thing is to cut through the vaginal wall over the tumour, tie its pedicle, and remove it. But vaginal oöphorectomy, especially under such circumstances, is more difficult than abdominal ovariotomy.

How ovarian tumours end.—Parovarian tumours are sometimes cured by bursting. The vast majority of ovarian cysts, if not removed, go on getting larger and larger until the patient dies.

CHAPTER LIV

DIAGNOSIS OF OVARIAN TUMOURS

Phantom tumours.—Bigness of the belly does not
necessarily imply tumour. It may be due to : (1)
fat, (2) flatus, (3) muscular action, or to a combina-
tion of them;

Palpation.—In a case in which an abdominal
tumour is suspected, first see whether fluctuation is
present. Put one hand on each side of the belly,
and gently flip it with the fingers. If no fluctuation
is felt, the belly does not contain free fluid or a large
cyst. Then percuss. The only resonant tumours
are physometra and rare ovarian tumours, in which
the cyst contents have decomposed and liberated gas.
Next, palpate. Bid the patient draw up her legs.
Talk to her, and get her to talk ; and while doing so
steadily press your fingers down into the pelvis, back
to the spine, and into each loin. If the patient con-
tracts the abdominal muscles, try by steady pressure
to tire them out. If you can press the fingers well
home in these situations, there can be no large ab-
dominal tumour. Lastly, examine bimanually, and
get the uterus and its appendages between your
hands. The fatter the patient and the more she re-
sists, the more difficult is a complete examination of
the belly. If you cannot satisfy yourself, ask for
an examination under anæsthesia. By this you will
eliminate the difficulty introduced by muscular re-
sistance.

The following are the causes which produce enlargement of the belly with fluctuation :—

I. The common ones.
1. Full bladder.
2. Ascites and intraperitoneal collections of fluid.
3. Ovarian cyst.

II. The less common.
4. Hydramnios.
5. Hydronephrosis or pyonephrosis : cystic disease of kidney.
6. Uterine tumours containing fluid.
7. Hydrosalpinx.
8. Distended gall-bladder.
9. Hydatid cysts.

III. The rare, those which can only exceptionally be diagnosed.
10. Pancreatic cysts.
11. Mesenteric cysts.
12. Splenic cysts.

Full bladder.—Begin by passing a catheter; for even if the bladder be not full enough to be itself felt as a tumour, it may prevent you from feeling the parts on bimanual examination as plainly as you ought to do.

Ascites—that is, fluid free in the peritoneal cavity.

(*a*) *The shape of the abdomen.* When the patient lies on her back, the outline of the belly is rather flattened in front and bulging in the flanks. When fluid is in a cyst, the tenser the fluid the more nearly spherical is the cyst.

(*b*) *Universality of fluctuation.* The fluctuation wave in ascites is felt all over the abdomen. When fluid is in a cyst, the area of fluctuation is that of the cyst cavity.

(c) *Disposition and mobility of dulness.*   In ascites the bowels float up to the top of the fluid.   Hence with the patient on her back there is resonance in front and dulness in the flanks.   The reverse is the case with an ovarian tumour (Figs. 152, 153).   The dulness is movable.
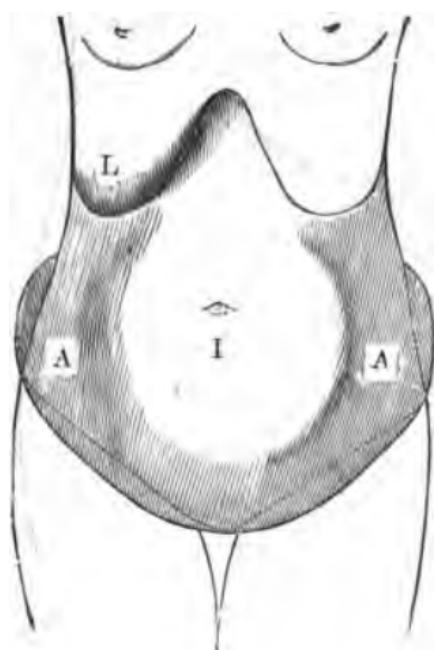
Fig. 152.—Diagram showing distribution of dulness and resonance in ascites.   (*R. Barnes.*)

A, Ascitic dulness ; I, intestinal resonance ; L, liver.

(d) *Presence of a cause for ascites*, such as disease of liver, kidney, heart, or lungs.   This should always be looked into.   But a patient with disease causing ascites may also have a tumour.

(e) Measure so that you may be able to judge accurately as to increase or diminution in size.

Tubercular disease of peritoneum.—This may produce ascites without any symptoms of peri-

tonitis. In these the diagnosis is often difficult, and can only be made by an exploratory incision; and as this is curative as well as informing, it is proper to make one in a case presenting features that suggest tubercular disease of peritoneum.
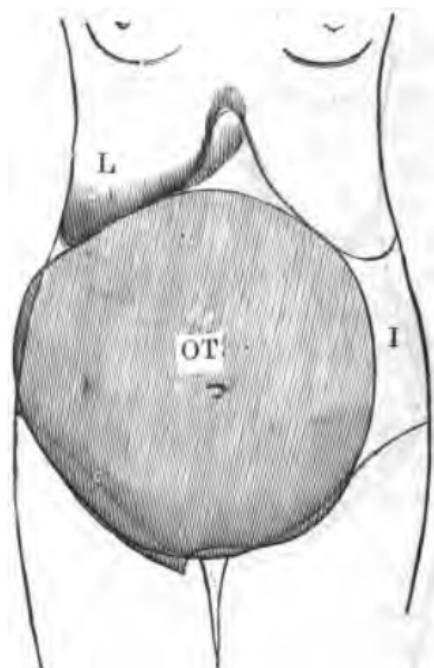
Fig. 153.—Diagram showing distribution of dulness and resonance with an ovarian tumour. (*R. Barnes.*)

o t, Dull area of ovarian tumour; i, intestinal resonance; l, liver.

There are three kinds of tubercular disease of peritoneum:

(1) *Acute miliary tuberculosis:* with sudden onset, rapid progress, and serous or sero-sanguineous effusion.

(2) *Chronic caseous and ulcerating tuberculosis:* large growths caseating, ulcerating, leading to perforation, and often to sacculated suppuration.

(3) *Chronic fibro-tuberculosis:* subacute, with little exudation, and hard and pigmented tubercles.

In 30 or 40 per cent. in women the Fallopian tubes are affected—generally the fimbriated ends—and there is good reason to think that the tubal disease is the starting point of the mischief, and that by removal of such tubes general tuberculosis might be avoided (*see* Chapter XVII.).

Clinically.—(1) Tubercular disease of the peritoneum may be latent, occurring without a single symptom. It has been thus discovered in operations for disease of another kind.

(2) It may come on suddenly, with symptoms like those of strangulated hernia or acute peritonitis.

(3) There may be gastric symptoms : vomiting, inability to take food, and wasting.

(4) It may simulate enteric fever : irregular fever, distension of abdomen, etc.

(5) Ascites is seldom great. Tympanites is common. Subnormal temperatures are met with. Pigmentation is occasional.

Tumour formations.—Tubercular disease of the peritoneum has often been first discovered when the belly has been opened for a supposed tumour. Tumours formed by tubercular disease may be of five kinds :—

(*a*) *Omental tumours.*—Tubercle growing in the omentum thickens, puckers, and rolls it up, till it forms an elongated firm mass attached to the transverse colon, and lying across the upper part of the abdomen. Above this tumour is the resonance of the colon, by which it may be distinguished from an enlarged liver.

(*b*) *Splenic tumours.*—There may be thickening of the splenic capsule, and effusion of lymph and tubercular masses in its neighbourhood. Such a tumour will but present the signs common to splenic tumours generally.

(*c*) *Sacculated exudations.*—These are the most

common, and have been repeatedly taken for ovarian tumours, until the abdomen was opened. The tumour may be nodular from the presence in it of caseous masses. The exudation is limited by adhesions between coils of intestine, other abdominal viscera, and the abdominal wall. It may be impossible to make a diagnosis in any other way than by watching the course of the case. An ovarian tumour goes on growing; an effusion may be partly absorbed.

(d) *Retracted and thickened intestinal coils.*—The matting together and thickening of coils of bowel may form a distinct mass, and lead to the diagnosis of a solid tumour. Such tumours may be resonant, which should suggest the possibility of their being formed of bowel.

(e) *Mesenteric glands.*—Extensive tuberculosis of these glands forming palpable tumours associated with ascites have been met with. Old writers called these tumours " abdominal scrofula."

Diagnosis of tubercular tumours. — The most important difficulty is the diagnosis between sacculated effusions and ovarian tumours.

First, *the history.* Tubercular antecedents, gradual failure in health.

Second, *the physical signs.* If the tumour be small, its outlines will not be so definite as those of an ovarian cyst, and it will not be so movable.

Prognosis.—There is now no doubt that this disease often ends in recovery. In many cases in which the belly has been opened and fluid withdrawn, permanent cure has followed. The practical rule for treatment is that, in any case which is suspected to be tubercular peritonitis, the abdomen should be opened.

Ascites with a tumour.—Mobility of dulness is not so marked as in ascites without a tumour. By

pressing deeply down over the margin of the resonant
part you may push aside bowel and come upon the
dull tumour.   When you quickly press the tips of the
fingers down upon the belly wall, you displace the
fluid, and come upon the resisting surface of the
tumour.   In a case such as causes difficulty of diag-
nosis, letting off the fluid will be called for as a thera-
peutic measure.   Make a small incision, let off the
fluid, and then put in your finger and feel if there is
a tumour.

Ovarian tumours. — The commonest fluid
tumour in the female belly is an ovarian cyst.   The
fluctuation may be felt only over the tumour ; nor it
may be felt over parts of the tumour, but not all the
way across.   The former indicates one large cyst ;
the latter a compound cyst with more than one large
cavity.   The outline of the tumour is, on the whole,
rounded.   There is resonance between it and the
upper ribs.   The tumour is distinct from the uterus,
although connected with it.   You will make this sure
by bimanual examination, thus grasping, if possible,
the uterus separately from the tumour.   If you can-
not do this, the sound will generally tell you the direc-
tion and length of the uterine cavity.

**Diagnosis between ovarian tumours and
uterine fibroids.**—The distinguishing marks of
fibroids are their hardness, the absence of fluctuation,
the elongation of the uterine cavity, and the fact that
when you move the cervix you move the tumour, and
when you move the tumour you move the cervix.   But
there are exceptional cases in which diagnosis is im-
possible.   (1) One kind of ovarian tumour may be
taken for a fibroid, viz., an intraligamentous tumour,
pushing the uterus to the side of the pelvis, and not
containing a cyst large enough for fluctuation to be
distinct.   (2) A multilocular ovarian cyst generally
contains, besides the big cyst, many little cysts.

But it may be that these solid masses of little cysts
are all in front and at the sides, and the big fluctuating
cyst behind and in the middle.   Then, when you pal-
pate the belly, you will feel solid bosses and no fluc-
tuation.

Fibroids simulating ovarian tumours.—
Fibroids may degenerate, so that they come to con-
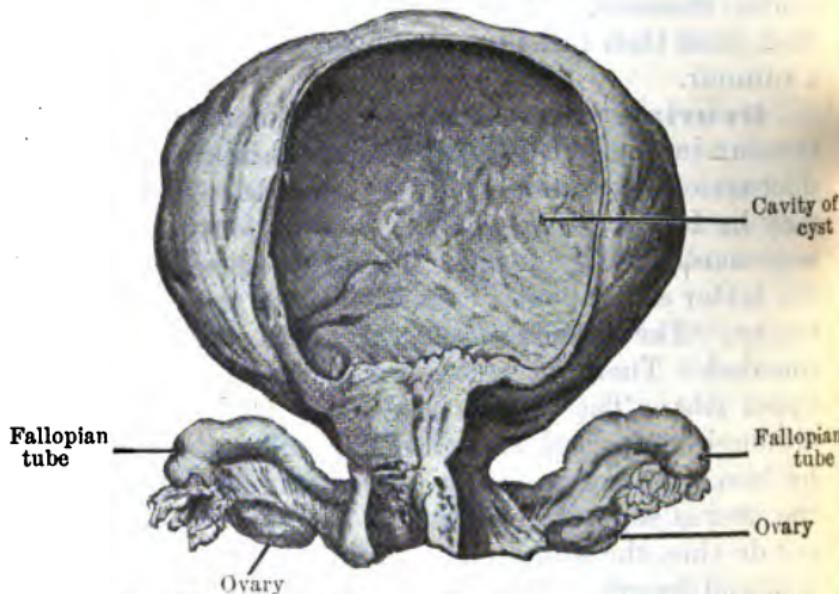
Fig. 154.—Thin-walled fibro-cystic tumour of uterus.   (*From
specimen* 4,643D·*in the Museum of the Royal College of
Surgeons.*)

tain spaces filled with fluid, which will give fluctua-
tion.   Such degeneration is apt to occur in sub-
peritoneal tumours, and in them the uterine cavity is
often not lengthened.   You may thus have to do with a
fluid tumour attached to a uterus which, so far as phy-
sical signs can tell you, is not enlarged.   Such a tumour
may present a wall as thin as paper, and having
the mother-of-pearl appearance of an ovarian tumour
(Fig. 154).   There are all intermediate stages between

such tumours as these and solid fibroids with cavities too small to alter the physical signs.

A sarcoma of the uterus may break down, and bleeding into it produce a fluctuating cavity which may be taken for an ovarian cyst (Fig. 155).
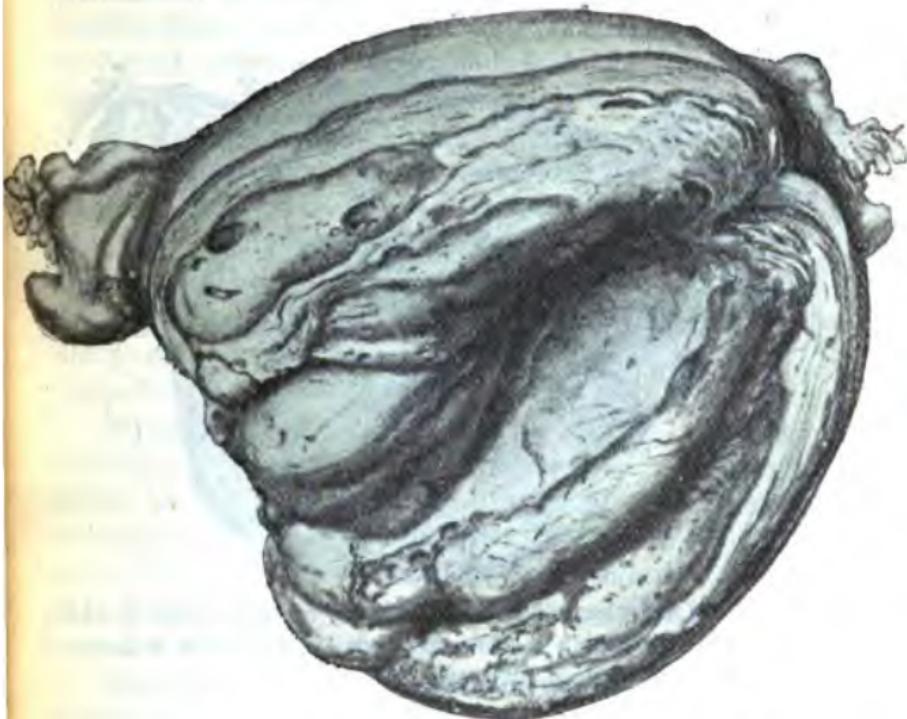
Fig. 155.—Sarcoma of uterus. (*From specimen* 4,672D *in the Museum of the Royal College of Surgeons.*)

Hæmatometra (Fig. 156).—I have seen one case in which a fluctuating tumour was formed by three gallons of bloody fluid contained in the uterus.

Hydronephrosis forms a tumour which may be difficult to distinguish from an ovarian tumour. An ovarian tumour, while distinct from the uterus, is yet attached to it, and pulls on it when moved about. An enlarged and mobile kidney can be pressed up

Q

into its place under the lower ribs, but not down into the pelvis, and when moved about does not pull on the uterus. But a hydronephrosis may be so large as to reach down to the pelvic brim, and then the limits of its mobility do not aid us. The most useful sign is that the colon runs in front of the kidney,
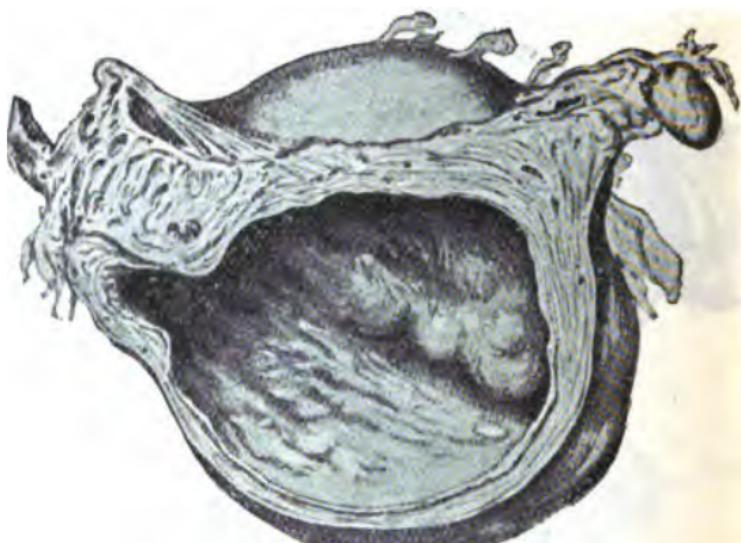
Fig. 156.—Large hæmatometra, probably caused by the breaking down of a fibroid. (*From specimen* 4,604A *in the Museum of the Royal College of Surgeons.*)

and may be resonant, while the loin behind it is dull. An ovarian tumour is dull in front, and there is resonance behind it in the loin. Lastly, examine the bladder with the cystoscope, and observe whether urine flows out of each ureter.

Hydrosalpinx.—Hydrosalpinx cannot clinically be distinguished from an ovarian cyst. When a hydrosalpinx is removed by operation it is nearly always because it has been taken for an ovarian cyst. Hydrosalpinx so large that fluctuation in it can be felt through the abdominal wall is rare. The re-

moval of a cyst, whether a hydrosalpinx or a tubo-ovarian cyst, is the best treatment, and is attended with but little risk.

Mesenteric cysts.—A cyst of the mesentery has been taken for an ovarian tumour. The only treatment is to open the belly. Never thrust a needle into a doubtful tumour. If a mesenteric cyst be found, it should be opened and the fluid let out. Some have been cured by stitching the opening in the cyst to the abdominal wall. The cyst will go on discharging for an uncertain time, and may finally close. A better practice is to enucleate the cyst, which is sometimes possible. If this cannot be done, the only curative measure is to resect with the tumour the length of the bowel to which the piece of mesentery containing the tumour is attached.

Pancreatic cysts.—A fluctuating tumour of the belly may be a cyst of the pancreas. Such a cyst might be taken for an ovarian tumour. By bimanual examination you ought to be able to find that there is no connection between the cyst and the uterus—that either can be moved without moving the other,—and you ought to feel the uterus and ovaries.

Splenic cysts.—In simple enlargements of the spleen the organ preserves its shape, but when cystic its natural shape is lost. Sometimes an enlarged spleen contains several cysts. Hydatid cysts of the spleen, though rare, are commoner than simple cysts. If a tumour that is supposed to be ovarian should afterwards turn out to be a splenic cyst, it may be removed with safety.

Omental cysts.—Sometimes the layers of the great omentum are separated by a collection of fluid. This has been called an "omental hydrocele." The foramen of Winslow has been found stopped up, and the lesser cavity of the peritoneum distended with

fluid. By bimanual examination the uterus and its appendages ought to be felt apart from the tumour.

Echinococcus cysts.—These may be taken f r ovarian cysts. The hydatid tumour or tumours may form a fluctuating swelling in the lower belly, extending down between the uterus and rectum. Such a tumour has been taken for an ovarian cyst. I know not how the diagnosis is in such a case to be made until the belly has been opened. The treatment of hydatid cysts is to remove the hydatids and drain the cyst.

Distended gall bladder.—A distended gall bladder, which is from seven to nine times commoner in women than in men, has been taken for an ovarian cyst. An enlarged gall bladder is situated in front of the belly, below the liver. By careful bimanual examination the uterus and ovaries will be felt apart from the tumour. A gall bladder so large as to be taken for an ovarian cyst requires operative treatment; and, therefore, if the surgeon be competent, the mistaken diagnosis, found out after opening the belly, will not be injurious.

Hydramnios.—Dropsy of the amnion, either with uterine or with ectopic pregnancy, may cause the belly to be enlarged and fluctuating. I shall describe these conditions in a subsequent chapter.

Exploratory incision.—If a tumour is of doubtful nature and is growing or causing serious trouble, the diagnosis should be completed by an exploratory incision. Never thrust a trocar or needle into you know not what. Either let the tumour alone, or do that which will cure it, if cure be possible, and if not, abolish doubt as to its nature. An exploratory incision should only be made by one competent to complete the operation if it be found practicable.

CHAPTER LV

OVARIOTOMY

Preparations for ovariotomy. — The patient should be in a properly drained and ventilated house, in a room large enough to accommodate the nurse as well as the patient. She should lie on a mattress, on a bed narrow enough to allow the nurse to reach her easily from either side. If these conditions cannot be complied with in the patient's house, she had better be moved elsewhere. The bowels should be cleared by an aperient given the night before, aided by an enema on the morning of the operation. The patient should take no food for six hours before the operation. Immediately before the patient gets on the table she should empty the bladder. If there be any doubt about the bladder having been emptied a catheter should be passed.

Instruments required:—

A scalpel.

A pair of toothed dissecting forceps—those sold as conjunctiva forceps are best.

Six large pressure forceps.

Six small pressure forceps.

Two blunt hooks.

Two retractors.

Blunt-pointed scissors.

Wells's large ovariotomy trocar, with tubing.

Wells's small ovariotomy trocar, with tubing.

A blunt-ended pedicle needle.

Twelve No. 1 half-curved needles.

A hank of No. 5 China twist for pedicle sutures ;
silkworm gut is the best material for the
wound stitches. It stands boiling well, and
is not irritating ; but it is not absorbed, and
therefore is not suited for the pedicle.

A hank of No. 1 China twist (for tying bleeding
points).

Six Rampley's sponge-holders.

Needle-holder—Wells's, but with a clip.

Sponges : one flat, twelve round small sponges,
or pads of sterilised gauze.

Other things needed are :—

Razor.

Two waterproof aprons, one for the operator, one
for his assistant.

Two trays or dishes for instruments, filled with
1-20 solution of carbolic acid ; in the one put
scalpel, scissors, dissecting forceps, trocars,
clamp ; in the other, pedicle needle and wound
needles threaded.

A wide-mouthed pint jug filled with carbolic
acid solution ; in this put the large pressure
forceps.

A tumbler filled with carbolic acid solution ; in
this put small pressure forceps.

Iodoform gauze, iodoform, Gamgee tissue, binder.

Preliminaries.—Let the person who is to give
the anæsthetic choose which he will give, for he is
responsible for it. When the patient is unconscious,
put her in the raised pelvis position. Next wash
the abdomen and symphysis pubis with soap and
water, and shave the mons veneris. Put macin-
toshes above and below the part required to be ex-
posed, and on these a large sterilised towel, having a
hole six inches in length cut in the middle.

How to open the belly.—Cut with a scalpel

in the middle line through the skin midway between pubes and umbilicus. You will come upon the sub-cutaneous fat. Cut through the subcutaneous fat until you come to the white glistening surface of the aponeurosis beneath it. If there are any bleeding-points, clip them with pressure forceps.

Now with a conjunctiva forceps pick up the aponeurosis, and carefully cut through it with the point of the scalpel where you have picked it up. You may see beneath it the subperitoneal fat; if so, en-large the opening till it corresponds in length with the skin cut. You may see beneath it muscle; if so, you have not hit the middle line. In that case, push the handle of the scalpel between the muscle and its sheath. On the side next the linea alba the scalpel will not progress. Having thus found the linea alba, push the muscle away from it with the handle of the scalpel, and then cut through the aponeurosis to the required length. Now pick up with the forceps the subperitoneal fat and peritoneum, and pull it up through the wound. Open the peritoneum by cut-ting with the blade of the scalpel held horizontally. Put your finger in the opening, and with this as a direc-tor cut through the peritoneum along the whole length of the wound.

Possible mistakes at this stage.—(1) You may think you have got through the peritoneum when you have not done so, thus mistake subperitoneal fat for omentum, and so strip the peritoneum off the muscles.

(2) The cyst and the peritoneum may be adherent, so that you open the cyst when you think you are going through the peritoneum or the linea alba. When close adhesion is present, error may be unavoidable. If it occur, let so much of the cyst contents flow out that it may be easy to prevent the residuum from escaping into the peritoneal cavity, and then open the

belly higher up, above what seems to you the upper limit of the tumour. You will there get into the peritoneal cavity ; and this done, you can extend the incision downwards, and separate the cyst wall from the parts to which it adheres.

(3) The bladder has been opened when the operator thought he was opening the peritoneum. Rectify such a mistake by sewing up the cut in the bladder with Lembert's suture, and then extending upwards the incision through the belly wall until a part of the tumour above the bladder is reached.

Examination prior to tapping.—The surface of a multilocular ovarian cyst is white or grey, or with a mother-of-pearl lustre. If the tumour you expose is of a purple colour, think of the pregnant uterus. If it be of a lighter brick-red colour, think of a uterine fibroid or sarcoma. If its walls seem thick, think of a dermoid. If adherent, remember that it may have suppurated. If the surface is ecchymosed, or purplish-black in colour, the pedicle is probably twisted. If, with this, acute symptoms date some days back, and there is fever, the probability is that there is suppuration. Put in two fingers and feel round the base of the tumour. Try to make out its connection with the uterus, and whether it is • bilateral or not.

If the tumour is bilateral, the probability is that it is papillomatous or malignant. If the tumour is a dermoid, or has suppurated, you had better enlarge the incision, and remove the tumour without tapping it. If a tumour is large and unilateral, and only slightly adherent, it may be tapped with safety. If large, and extensively adherent, its complete removal without tapping will need a large incision, involving much exposure of bowels ; while even if the contents be irritating, the adhesions will protect the general peritoneal cavity, and they can be separated more

easily when the tumour has been lessened in size by tapping.

Tapping the cyst.—The best trocar is Wells's. See that the end of the tubing is over the pail to receive the fluid. Let an assistant press the belly wall against the cyst, and so as far as possible prevent fluid from getting into the peritoneal cavity. Hold the trocar perpendicularly to the surface of the tumour, and with a smart push thrust it in. In most cases the fluid runs freely out. When enough fluid has run out so to relax the tension of the cyst wall that it can be pinched up in a fold, seize it with forceps, pull it up through the wound. While the fluid is running your assistant should keep the belly wall applied to the tumour, and as you pull the tumour out he should press the belly walls together behind the tumour, so as to express it. If there are secondary cysts so big as to prevent the tumour from coming out, enlarge the opening in the cyst, put in your hand, and try to break them down. If you cannot do this, enlarge the incision.

How to deal with adhesions.—The adhesions you have first (in order of time) to deal with are those between the tumour and the front wall of the belly. Break these down by passing the hand between the tumour and the belly wall. Bleeding from such adhesions is hardly ever great. If it has not stopped by the time you have cut away the tumour, examine the surface with a good light, pick up and tie the bleeding-points.

Omental adhesions are the most common. Deal with them after the tumour has been brought out of the belly. If the adherent pieces are of a less width than that of two fingers, tie each piece about two inches from the tumour, and cut through it on the distal side of the ligature. After cutting each piece, examine it to see that it does not bleed. If there

Q*

is a large piece of omentum adherent, tie it in several bundles.

Adhesions to bowels need care. Take the adherent bowel between your finger and thumb, so that your thumb-nail is opposite the seat of adhesion, and strip the bowel off the cyst. If you cannot detach it, take the scalpel, and dissect off a small bit of the cyst wall with the bowel ; but you will seldom have to do this. If the stripped-off part of bowel bleeds, pick the bleeding-points up with forceps, and tie them.

Adhesions in the pelvis give most trouble. Break them down by steady pressure with the finger combined with pulling on the tumour. If the tumour be an intraligamentous growth you must carefully divide its peritoneal covering, and then enucleate the tumour from its bed underneath the peritoneum. If there be much oozing, stuff the pelvis with sponges until you have tied the pedicle and cut away the tumour.

How to stop hæmorrhage. — If there is bleeding from pelvic vessels, you will be able to see it, with the patient in the raised-pelvis position. Wipe the peritoneum in front of the uterus and broad ligaments, and see that this is not the source of hæmorrhage. Then pick up the uterus, and hold it forward (grasping it with a volsella if necessary), and you will see into Douglas's pouch. Clean it out by sponging, and see where the bleeding comes from. If you have enucleated an intraligamentous growth, hold the peritoneal folds up and apart, and you will see into the cavity from which the tumour came. Clean it out with sponges, and look for bleeding-points. If you can see distinct bleeding-points in the pelvis, grasp them with pressure forceps, and try so to pull them up that you can tie them below the forceps. If you cannot do this, and the bleeding-points are small, it may be enough to leave the forceps on for

a few minutes, while you attend to other things, and put the stitches in the abdominal wound. If, when everything has been done, you find that bleeding recurs when a forceps is taken off, replace it, and let it stick out at the wound and act as a drainage tube. But this is seldom required, for bleeding after enucleation or separation of pelvic adhesions is usually such general oozing that pressure forceps cannot be applied. If so, stuff Douglas's pouch, or the broad ligament, as the case may be, with iodoform gauze, as tightly as you possibly can, and bring the end out at the lower angle of the wound to serve as a drain. Or put in first a sheet of gauze, and then plug inside this, so that a bag is formed. The use of the bag is that the pieces of gauze inside it can be taken out with less disturbance of the parts. Remove the gauze at the end of a week ; but it may be left in for a fortnight or more.

Securing the pedicle.—The best way of dealing with the pedicle is to tie it. The best ligature material is silk. No. 5 China twist is thick enough. The pedicle consists of Fallopian tube, ligament of ovary, folds of peritoneum, and vessels and cellular tissue between them. Take the blunt pedicle needle, threaded, and transfix the pedicle with it at a part where there is no large vessel. Put your finger in the loop of the ligature, and withdraw the needle. Cut the loop so that you may have two ligatures of equal length passing through the pedicle. Intertwine them so that when each is put round one half of the pedicle, they may be interlocked in the middle. Tie each ligature as tightly as you can by steady pulling without jerking. Make the first hitch of each knot a double one, to prevent its slipping and getting loose while you are tying the second. Tie with a reef knot, and cut short the ends of the ligatures. If the pedicle is broad, after tying one loop, transfix the pedicle

again, with the needle carrying a second ligature. Withdraw the second ligature from the needle, and thread the needle with the second loop of the first
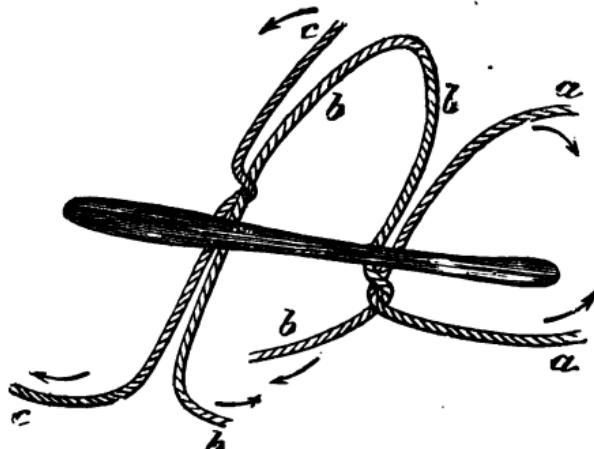
Fig. 157.—Double transfixion, showing interlocking of the threads. (*Doran*)

ligature.   Withdraw the needle, thus bringing the second loop of the first ligature through the same hole as the second ligature.   Interlock these two ligatures. Tie the second loop of the first ligature
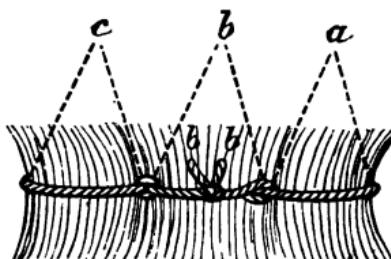
Fig. 158.—Double transfixion : threads tied. (*Doran.*)

(which will thus compress a bundle of tissue in the middle of the pedicle), then tie the second ligature round the remainder of the pedicle (Figs. 157, 158). It may be necessary, if the pedicle is very broad,

to transfix it even three or four times. Put two
strong pressure forceps on the pedicle outside the
ligature, and cut away the tumour outside the pressure
forceps. After cutting away the tumour, examine the
surface of the stump to see that it does not bleed—
first before removing the pressure forceps, and then
after removal of each. Having made sure that it does
not bleed, drop the stump. Examine the other ovary.
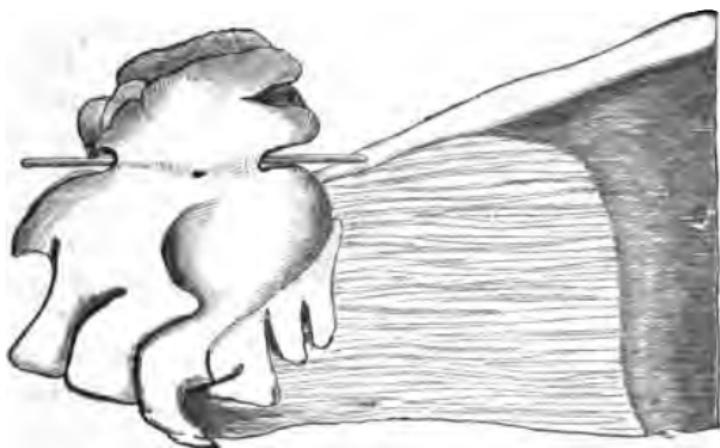
Fig. 159.—Stump of an ovarian pedicle : death from tetanus on
the eighth day after operation. The silk ligatures are com-
pletely concealed, a glass rod is placed between them and the
bands of lymph passing from the proximal to the distal portion
of the stump. From nature. (*Doran.*)

If you find that it is the subject of disease which will
progress if the tumour removed is a papilloma or
malignant, or if the patient is over forty-five, re-
move it.

What happens to the ligature.—The tissues
above and below the ligature bulge over it, and come
into contact. Lymph is exuded, covers the ligature,
and becomes organised into fibrous tissue (Fig. 159).
Leucocytes invade the ligature, and in time eat it up.
The thicker the ligature, and the more strands are

put round the pedicle, the heavier is the meal for the leucocytes ; hence the greater the risk of suppuration round the ligature, which will then be ultimately discharged by the abdominal wound, or, more rarely, by the bladder or rectum.

Cleansing of peritoneum.—Throughout the operation, prevent soiling of the peritoneum as much as possible. When fluid is running out, guide it outside the body by pressing the abdominal walls against the cyst, and by packing sponges, or gauze pads, to oppose its entrance to the peritoneal cavity. Handle the viscera as gently as possible, and expose them for as short a time as possible ; for rough handling, prolonged manipulation, and exposure damage the epithelium. If bowels protrude, and you cannot keep them back while removing the tumour, cover them up with a towel wrung out of warm sterilised saline solution.

But fluid may get into the belly in spite of care. In some cases no care can prevent it, as, for instance, when a cyst has been burst before operation, or is torn early in the operation. When there is fluid in a limited area (and you should try to limit any effusion that takes place), remove it by sponging, and try to leave the peritoneum dry. But when there is much fluid free among the bowels, you cannot try to sponge dry every viscus and every recess without possibly doing more harm than the fluid would. Pour in sterilised normal saline solution at the temperature of the body so as to fill the peritoneum with it. Sterilised normal saline solution is as good to wash with as any antiseptic. But, if none is at hand, the chances are millions to one against water from the tap containing septic organisms.

As to drainage.—Bleeding having been stopped, and the peritoneum cleaned, close the belly. First count the sponges and forceps, to make sure that

none have been left. But you will meet cases in which you cannot quite stop oozing, nor quite make clean the peritoneum. If the condition of the parts is such that, after the belly is closed, fluid will be poured out in greater quantity than the peritoneum can absorb, drainage is necessary.

Closure of the wound.—Upon how the belly wound is closed depends whether a ventral, or, as Americans better term it, an incisional, hernia subsequently forms. Hernia may occur many years after an operation. Hernia takes time to develop. The longer the date since the operation the more common is hernia. Many plans have been adopted to prevent hernia. I think the best way is to put in one set of stitches; to be careful that each stitch goes through the peritoneum close to its edge, so that no large breadth of peritoneum is interposed between the muscles; that each stitch takes up a good bundle of muscle and aponeurosis; that no skin is tucked in, and that the muscle bundles are well pressed together. The best suture material is silkworm gut; No. 4 China twist will also do.

Put a flat sponge in the belly underneath the incision to protect the bowels. If there has been oozing, put also a "tell-tale" sponge deep down in the pelvis. Stitch with No. 1 half-curved needles held in a holder. Pass each stitch from within outwards, entering close to the peritoneal edge, taking up a large bundle of muscle, and emerging about a quarter of an inch from the skin edge. When all the stitches have been put in, hold their ends in artery forceps, and then with a blunt hook draw them away from the centre of the wound. Then take out the sponges. The deep one will show how much oozing is going on. Tie first with a double turn, just tight enough to prevent gaping of the wound; then with a second hitch. Too tight

stitches will inflict unnecessary pain, and may cause stitch-hole abscesses. Pull the skin edges together with forceps, so as to smooth out puckers. If still the skin edges are apart, put in some superficial stitches between the deep ones, so as to bring together skin and subcutaneous fat.

Dressing the wound.—Wash the wound and the skin around; dry it, and liberally powder with iodoform, or lay on the wound several layers of iodoform gauze. Then apply a pad of Gamgee tissue large enough and thick enough to prevent any folds of the binder from being felt as lines of pressure. Then put on a flannel binder.

Remove the stitches as a rule on the eighth day.
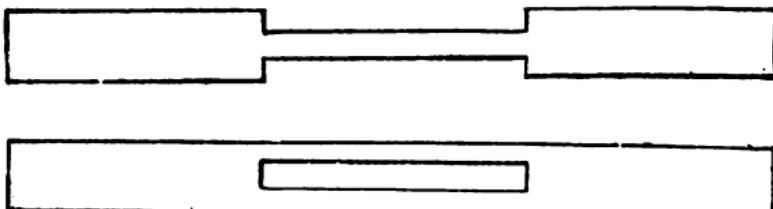
Fig. 160.—Strapping to draw together parts after abdominal section.

Leaving the stitches in too long favours stitch-hole abscesses; taking them out too soon brings danger of the wound bursting open if the patient coughs, vomits, or strains. After taking out the stitches, support the wound with strapping. Put a pad of Gamgee tissue three inches wide on the wound. Cut two pieces of strapping each two and a half feet long and two inches wide, as in Fig. 160. Apply them on opposite sides; pass one through the slit in the other, and draw them tight; keep the wound thus supported until it has healed. The patient may generally begin to get up at the beginning of the third week.

After-course and treatment.—While the patient is recovering from the anæsthetic there is generally *vomiting*. During the two days following ovariotomy most patients suffer much from flatulent colic. This pain usually gets better about the third day. There is nearly always much thirst. Tell the patient to take spoonfuls of water as often as she likes, provided the fluid does not make her sick. When inclination to vomit has ceased, let the patient have milk. When she can take and keep down this, she may have other liquid foods ; and then gradually get back to ordinary diet. Patients often long for tea, and there is no reason against it. They are seldom inclined for ordinary food before the fifth or sixth day. Let the patient pass her urine herself if possible.

Gastric catarrh.—As a rule an operation on the peritoneum is followed by gastric catarrh, which lasts nearly a week. The patient is thirsty, and has no appetite. The tongue becomes coated. There is flatulence, and colicky pain in the belly, sometimes severe.

Drainage.—The keeping open a channel by which exuded fluid can be withdrawn from the belly is called *drainage*. Drainage hinders the healing of the wound and so makes hernia more likely. It keeps open a way for the entrance of microbes. Therefore when in doubt close the wound.

The cases for drainage are : — (1) Those in which a pus-containing cavity has been opened, but not entirely removed ; here a path for the escape of pus must be kept open. (2) A hole may have been torn in the rectum. In that case drainage is necessary for the escape of fæces. (3) Those in which there is much oozing of blood from small vessels which you cannot stop during the operation, but which will be stopped in time by the clotting

of the blood. (4) If a cyst containing irritating or infective material has burst, and you have washed the peritoneum, and want the water holding noxious matter in it to escape, you must provide a way for it to do so.

Drainage implements.—If you have used gauze to stop bleeding, the end of the gauze brought out through the wound will serve as a drain. Otherwise, an indiarubber tube, put with its end in the bottom of Douglas's pouch, is the best thing.

Put over the opening a thick pad of wood-wool,

Fig. 161.—Diagram showing how ligatures may find their way into the broad ligament. (*Lawson Tait.*)

a a, peritoneum ; *b c*, tissues embraced by ligature.

Gamgee tissue, or Tillmann's dressing, and bid the nurse change it as often as it gets wet through. Take out the gauze at the end of a week, or later. If an indiarubber tube has been used, cut it level with the edges of the wound, and leave it in, shortening it daily as it is pushed out by granulation tissue.

The after-fate of ligatures.—As a rule the ligature is finally absorbed (Fig. 159). In some suppuration occurs, and pus with the ligature is discharged, either externally through the wound or into a viscus. The ligature is held down by the vessels

it embraces. The peritoneum round it swells, and is raised up, first around and then over it, so that it comes to form a tube of inverted peritoneum with
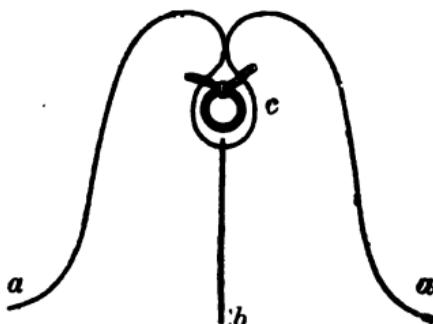
Fig. 162.—Diagram showing folds of peritoneum adherent above ligature. (*Lawson Tait.*)

a a, peritoneum ; *b*, tissues held by ligature ; *c*, ligature loosened by suppuration.

the ligature at its base (Fig. 161). The mouth of this tube is closed at its peritoneal end by adhesions (Fig. 162), and opened at the other end by suppura-
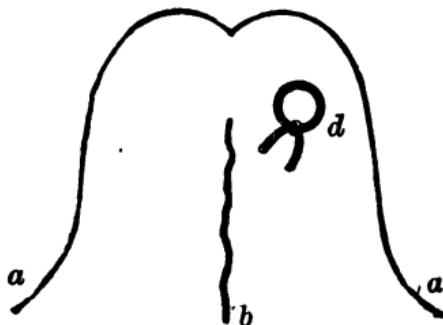
Fig. 163.—Ligature in broad ligament. (*Lawson Tait.*)

a a, peritoneum ; *b*, vessel held by ligature ; *d*, ligature.

tion, so that the loosened ligature comes to lie in the broad ligament (Fig. 163). Thence it travels to bladder or rectum, as the case may be. A forceps has been known to make its way into the bladder in this manner.

CHAPTER LVI

AFTER-RISKS OF OVARIOTOMY

1. **Shock.**—Death from shock only occurs after the removal from exhausted patients of very large and extensively adherent tumours. Death in some such cases may be really due to hæmorrhage.

2. **Hæmorrhage.**—The earliest danger after ovariotomy is that of bleeding. This may be (*a*) from the pedicle, (*b*) from torn adhesions. (*a*) Bleeding from the pedicle comes from slipping of the ligature. Therefore be most careful to see that the pedicle is not bleeding before you close the belly. (*b*) When adhesions are broken down, there may be bleeding from vessels which can be seen, picked up and tied. But besides this, there is slight oozing which will be stopped in time by clotting of the blood.

The occurrence of bleeding after the operation is shown by increasing pallor, with quickness and smallness of the pulse. When these indications of internal bleeding occur, reopen the wound, wash out the blood, look for the source of hæmorrhage, and stop it either by ligatures, forci-pressure, or gauze packing.

3. **Peritonitis.**—The symptoms begin in the latter part of the second day. There is vomiting, the stuff brought up being green, brown, or black. The pulse is quick, wiry, and small; the belly becomes distended; the temperature may rise. These symptoms increase until the patient dies by asthenia. The diagnosis of peritonitis is made from the combination of these symptoms. In some cases the symptoms

are less acute, and the patient lingers on till the ninth or tenth day, and then dies with extreme distension of the belly.

Local peritonitis.—Vomiting and distension are not marked, but there is quickness of pulse—it may go up to 150 or more—and rise of temperature, with pain and tenderness in the lower belly. The illness may be ended by the discharge of sanious fluid or pus, either spontaneously or with surgical aid. These are the cases which have sometimes been saved by reopening the abdomen. But to reopen the whole wound is an unnecessarily severe measure. The indication for interference is the presence with fever of hardness or swelling underneath the wound, or bulging behind the uterus felt by the vagina. If there is hardness below the wound, take out one or two of the lower stitches, open up half an inch of the wound with a probe, and, if fluid comes out, put in a small indiarubber drainage tube. If Douglas's pouch bulge into the vagina, cut into it with scissors, and let out the fluid. This is the kind of peritonitis that is prevented by drainage.

Formation of adhesions after operations. —Experience has shown that when the belly is opened shortly after operations, adhesions are always found. Ovarian tumours are often found adherent, without history of illness. Peritonitis is the process by which the peritoneum reacts to injury. When the injury is mechanical the reaction is triumphant. When the injury consists in invasion by pathogenic microbes the reaction fails, and the organism dies that the micrococci may live. Adhesions are in time absorbed ; but we know not whether they are *always* absorbed, nor how long it takes.

Causes of peritonitis.—Fatal peritonitis after ovariotomy comes from neglect of antiseptic precautions. Before the work of Lister, about one-third

of ovariotomy cases died from peritonitis ; the proportion now is not more than one-twentieth, if as much. The longer an operation lasts, the more the peritoneum is handled, rubbed, exposed, and chilled, the more it will be damaged, and the less it will be able to oppose the invading microbes. When bowel is long exposed its lustre becomes dulled, and then it becomes injected ; changes which indicate damage to the epithelium. When the peritoneum is only a little dulled its lustre can be restored by washing it with saline solution. To prevent such damage, if you have to make a long incision to get out a big tumour, as soon as you have got the tumour outside the belly, close with temporary stitches so much of the wound as is not needed for attention to the pedicle.

The use of anti-streptococcic serum.— Peritonitis is caused by micro-organisms ; streptococci are believed to be in this disease the chief. An anti-streptococcic serum has been prepared to combat the cocci. There are many different kinds of streptococci, some very virulent, some little virulent. Therefore a *polyvalent* serum has been prepared from a mixture of different kinds of streptococci. In a case of dangerous peritonitis it is wise to inject subcutaneously this polyvalent serum. But its preparation is not yet so perfected that we can in all cases predict success from its use.

Saline infusion.—Some cases of peritonitis have been cured by the injection of a large quantity of saline fluid. One way of doing this is that devised by Barnard.* A saline solution is made by dissolving a teaspoonful of salt in each pint of boiled water. The solution is put in a large jug which has previously been scalded out. An indiarubber tube about four feet in length, weighted at one end, at the other carries the fluid to a glass T-piece. This is connected

* *Clinical Journal,* vol. xxii., 1903.

by two further lengths of rubber tubing to two stout
brandy syringe needles.   This apparatus has all been
boiled.   The jug is placed about a foot above the level
of the patient's body ; if it is higher than this the in-
jection gives pain.   A syphon action is established by
immersing the whole of the tubing in the jug and
then clipping the ends.   Then the needles are inserted
under the skin of the thighs, or under the breasts,
the skin having been first carefully rendered as nearly
aseptic as possible.   Through each needle about a pint
of fluid per hour will run into the cellular tissue.   In
this way fifteen or twenty pints may be injected in
twenty-four hours.   But after about eight pints have
been injected, the patient should be watched lest
œdema of the lung be produced.   Repeated injec-
tions can be given day after day, until the patient is
able to keep down large drinks of fluid.   The *rationale*
of this treatment is the following.   In peritonitis,
owing to the vomiting and the little fluid taken, the
body is very short of water : without water, proto-
plasm cannot work, the leucocytes cannot combat the
microbes.   The injections supply the needed water.
While the blood is short of water there is a continuous
flow of microbe-laden fluid from the peritoneum into
the blood.   When the shortage of water is made up,
and water in excess supplied, the current is the other
way, from the blood into the peritoneum.   This is
shown by the increased discharge in cases that are
being drained.   Cases that seemed hopeless have
been treated in this way, and the symptoms have
suddenly disappeared by crisis, and smooth recovery
has followed : a mode of termination that follows no
other treatment.

A later improvement has been to put the jug con-
taining the fluid about six inches above the patient's
body, and deliver the fluid by a long flexible metal
tube into the upper part of the rectum, keeping

the patient sitting up, so that the pouch of Douglas is the lowest part of the peritoneum, with a drainage tube in Douglas's pouch.

Intestinal obstruction.—Sometimes a bit of bowel adheres in such a way that it gets kinked; this may occur as late as six years after operation.* It cannot be foreseen or prevented. The patient usually appears to be going on well during the first two days, or even longer. Then there is vomiting with increasing distension and constipation, though a little fæcal matter present in the bowel below the obstruction may have been passed. With these symptoms there is steadily rising pulse rate, sometimes temperature, and an anxious expression of face. These symptoms follow the vomiting and distension, and do not precede it as in peritonitis. They arise because the patient is being poisoned by ptomaines formed in her bowel, and the urgent thing in treatment is to give exit to the ptomaines. The most effective treatment is to reopen the abdomen, break down adhesions, and liberate the bowel; and this may be undertaken with greater confidence than in any other form of obstruction, because we know that obstruction after such an operation is nearly always in the sigmoid flexure. But if the patient's condition is very bad, or if examination of the sigmoid flexure fails to reveal the obstruction, it is better not to inflict on the patient the shock of a prolonged search for the seat of obstruction, but to secure a coil of distended bowel in the wound by two stitches, and then open it between the stitches. When the patient has ceased to be poisoned by ptomaines, there will be little risk in seeking for the seat of obstruction and closing the artificial anus.

Tetanus.—Like any wound, the ovariotomy incision may be inoculated with the tetanus bacillus. It follows in about one case in three hundred.

Pulmonary embolism. — Clotting in veins may follow ovariotomy, and the detachment of a clot and its lodgment in the pulmonary artery may cause sudden death during apparently normal convalescence. It is a danger which we can neither predict nor prevent. Phlegmasia dolens may follow ovariotomy; it differs in no way that I know of from the disease in the puerperal state.

Foreign bodies left in the belly. — Operators have sometimes left things inside the peritoneal cavity—sponges, wool-pads, forceps. If such a thing is left behind, an abscess will form round it, and the patient probably die. To prevent such a misfortune, always count forceps and sponges.

Fæcal fistula. — In separating adhesions the bowel may be torn. If the injury is to a free coil of bowel, sew up the hole at once with Lembert's suture. When there are pelvic adhesions, the rectum may be torn low down. In that case make the pelvis as clean as you can and put in a drainage tube. If there be nothing else to cause peritonitis, the opening will close and the patient do well.

Cystitis. — This is apt to occur if the catheter is used often. To prevent it, instruct the nurse always to pass the catheter by the aid of sight (so that its point may not wander about); before passing it, to wipe the vulva with wool soaked in 1-2,000 sublimate solution; to lubricate the catheter with a solution of corrosive sublimate in glycerine 1-2,000—not with oil; to wash the catheter immediately after use, running a stream of warm water through it; and to keep it lying in a 1-2,000 solution of sublimate.

Parotitis. — There is a close relation between the genital organs and the parotid gland. Parotitis is ten times commoner after injury or disease affecting the pelvis than after disease or injury of other

parts.* Ovariotomy may be followed by parotitis. It usually comes on within three weeks. Sometimes there are rigors with high fever, but generally not. Usually one gland only is affected, but both may be. The gland suppurates in rather more than half the cases.

The **treatment** is to let out pus early. Even if an incision be made before pus has formed it will give relief.

* *See* an excellent paper by Stephen Paget, *Brit. Med. Journal*, vol. i., 1887.

CHAPTER LVII

SOLID ABDOMINAL TUMOURS

THE commonest solid abdominal tumour in a woman is a uterus enlarged by fibroids.

Subserous fibroids.—Most subserous fibroids give no trouble and are found out accidentally on the *post-mortem* table.

The size to which they grow.—Subserous fibroids grow to a certain size, and then stop growing. We know not why they grow, nor what regulates the size at which they stop growing. They generally stop growing before they have become big enough to cause serious trouble, and long before the menopause. But in some few cases they grow to an enormous size. Some of the biggest tumours on record have been masses of subperitoneal fibroids. These cases are the exceptions. An enormous tumour causes suffering by its mere size and weight. It may damage other parts by its pressure, and thus indirectly endanger life.

Fibroids fixed in the pelvis.—The tumour may be fixed within the pelvis (Fig. 164). (1) A uterus containing a fibroid in its fundus may get retroverted and incarcerated under the sacral promontory, just like a uterus that contains an ovum. (2) A patient whose uterus contains a fibroid may become the subject of perimetritis, and thus the fibroid be fixed by adhesions. (3) The fibroid may begin low down in the uterine wall, and grow outwards into the broad ligament.

The tumour may become so tightly wedged in the

pelvic cavity that pressure effects follow. (1) It may press on either urethra or ureters, and lead to bladder irritation, or to retention and cystitis. (2) The rectum may be pressed upon ; obstruction of the bowels has been produced. (3) The tumour may press upon the
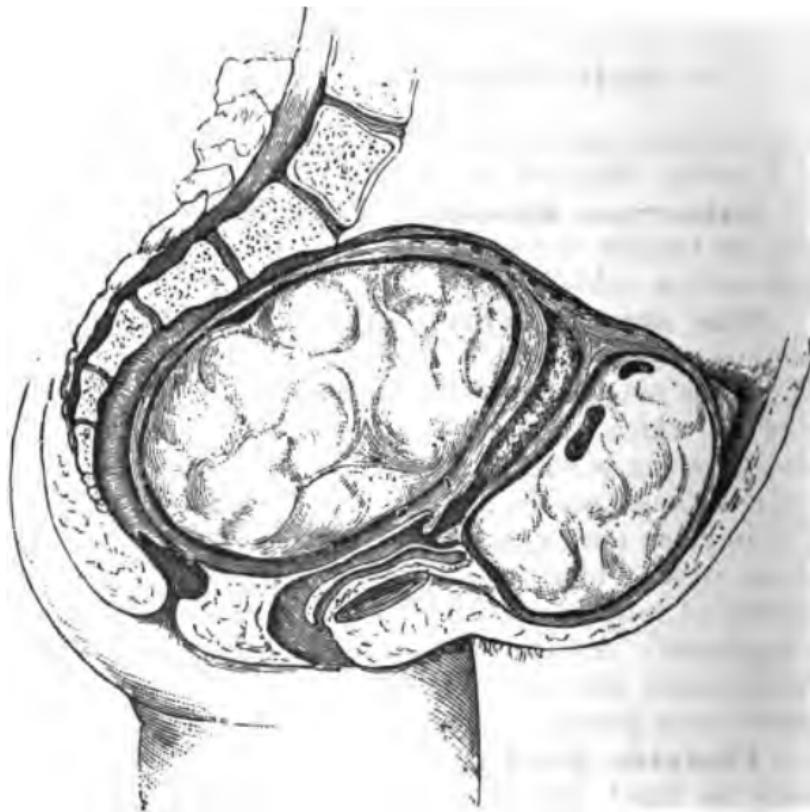
Fig. 164.—Fibroid incarcerated in pelvic cavity. (*After R. Barnes from a specimen in the Museum of St. George's Hospital.*)

nerves of the sacral plexus, and pains running down the legs may result. (4) The tumour may become gangrenous.

Their degeneration.—(*a*) *Obliteration of the pedicle.* When a fibroid projects from the uterine wall under the peritoneum, it may be covered only

by peritoneum, except at one place, where a stalk joins it to the uterus. The tumour and the uterus will be more or less independently movable, accord-
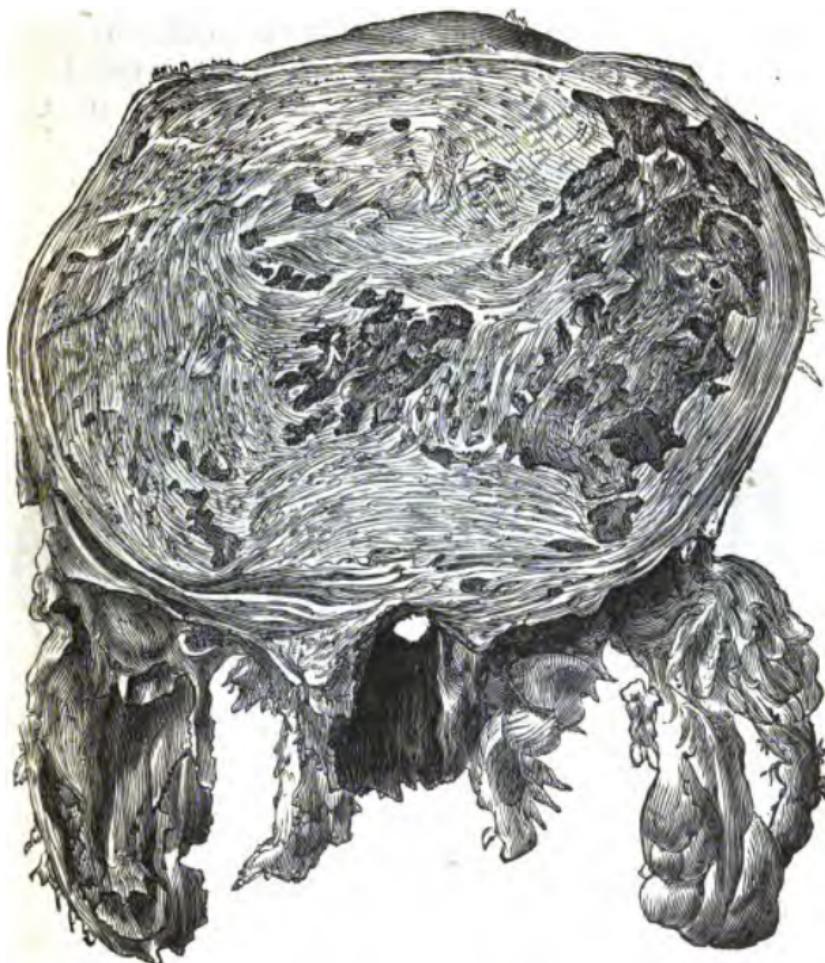
Fig. 165.—Uterine fibroid that has undergone calcareous degeneration. Half natural size. (*After R. Barnes, from specimen* 9,940³ *in the Museum of St. Thomas's Hospital.*)

ing to the length of the pedicle. A big tumour with a short stalk may so pull up the uterus that the cervix gets out of reach. It may so pull the body of

the uterus from the cervix that part of the canal may get obliterated, the cervix at this part being converted into a thin fibro-muscular cord. It may twist the uterus, and thus block up its canal. The fibroid receives its blood supply through the stalk. If thin, the tumour may *atrophy* or *calcify*. The latter term means that calcareous salts are deposited in the
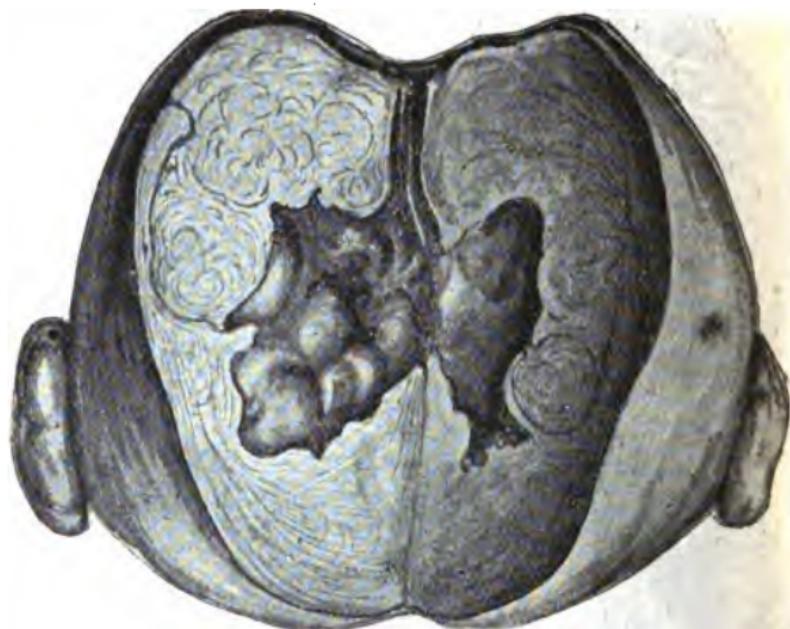
Fig. 166.—Fibroid with suppurated cavity in its interior. (*From specimen* 4,609B *in the Museum of the Royal College of Surgeons.*)

tumour (Fig. 165). The pedicle may become twisted, the circulation through it be stopped, and the fibroid become *gangrenous*. The tumour may become adherent to some other part, and be detached from the uterus.

Whether stalked or not, hard subperitoneal fibroids often become the subjects of (*b*) *softening*. Part of the tumour breaks down into a pulp. The peri-

toneum covering the softened spot may give way, and
the pulp escape into the peritoneum and set up peri-
tonitis. This is generally local and adhesive, but
may become general. When subperitoneal fibroids
cause death, it is more often by peritonitis than in
any other way.

(c) *Suppuration.* There are rare cases in which a
fibroid suppurates. There is not merely a softened
spot containing pulp, there is a hole in the wall of the
tumour, leading to a cavity in its interior, out of
which pus pours copiously (Fig. 166). An abscess
in a uterine fibroid differs from one seated in natural
tissues, in being bounded by a hard fibrous wall,
which has little tendency to close. Such cases lead to
death by hectic fever or lardaceous disease.

(d) *Sloughing.* There are cases in which a fibroid
sloughs in the form of a soft mass of loose fibrous
tissue. Suppuration takes place round it, and the
abscess may burst, and the slough be discharged either
through the abdominal wall or into a viscus, unless
the surgeon intervenes.* If not rescued by surgery,
most such cases die.

(e) *Fatty degeneration.* When a fibroid softens and
breaks down, fat globules are found among the
detritus. Spots of softening may be found not
only under the peritoneum, but scattered through
the substance of the tumour.

(f) *Fibro-cystic change.* Large spaces are often
found within fibroids containing mucoid fluid.
Tumours containing such spaces are commonly called
" fibro-cystic " tumours. The spaces are mere irre-
gular cavities produced by the softening and lique-
faction of solid tissue. This softening generally
implies an abundant blood supply ; and, therefore,
these tumours often grow fast. Liquefaction may go
so far as to convert the tumour into a bag of fluid

* See *Lancet*, Dec. 8, 1894.

with a comparatively thin wall, which fluctuates (*see* Fig. 154), and then diagnosis may be difficult.

(*g*) *Malignant degeneration.* Fibroids may become invaded by *cancer*. The presence of fibroids in a uterus not in the least increases its liability to cancer. But if a uterus which contains a fibroid becomes the subject of cancer, the cancer, if it be near the fibroid, will invade it. Fibroids may become the seat of *sarcomatous* growth.

Diagnosis of subperitoneal fibroids.— In most cases there is a tumour made up of hard round lumps, which is movable, and moves with the cervix uteri. Such a tumour can hardly be anything except a mass of subserous fibroids.

Fibroids or inflamed uterine appendages ?—When inflammation of the ovary or Fallopian tubes has lasted long, and led to the formation of a thick-walled suppurated cavity, you will find a hard lump fixed in the pelvis by the side of the uterus. Then it may be difficult to say whether the lump in the midst of the inflamed peritoneum is a fibroid or a pus sac. The following are the helpful points :—

FIBROID FIXED BY PERIMETRITIS	PUS SAC WITH THICK WALL
Pain only severe during acute illness.	Pain often severe ; its effects upon nutrition and facial expression visible.
Severe chronic pain rare.	Pain long persisting.
Symptoms quickly improving with rest in bed.	Slight relief only following expectant treatment.
With time tumour becoming more defined and more movable.	Not so.

Fibroids or malignant ovarian tumour ?—A malignant ovarian growth forms a fixed hard lump at the

side of the uterus. The points in diagnosis between these conditions are the following :—

FIBROID FIXED BY PERIMETRITIS	MALIGNANT OVARIAN GROWTH
A history of acute illness with pelvic pain.	No such history.
Patient, if wasted during acute illness, has gained flesh since.	Progressive wasting.
Growth slow.	Growth rapid.
Seldom œdema of legs or ascites.	Œdema of legs and ascites early.

Subperitoneal fibroids or ovarian cysts ?—Ovarian multilocular tumours contain agglomerations of small cysts, and these latter, felt through the abdominal wall, seem solid lumps. It is possible for these lumps to be all situated in front of the tumour, the big cyst, which would give fluctuation, being behind. If the cyst is not so big that the fluctuating part can be easily felt in the flanks, the solid lumps in front may give the impression that the tumour is fibroid. In time the ovarian tumour will grow big enough for fluctuation to be easily felt, and the error will be corrected.

Physical signs of hepatic, splenic, and renal tumours.—An enlarged liver rises and falls with respiration. An enlarged spleen has a sharp edge with a notch in it looking to the right side. An enlarged kidney has the colon in front of it. This bowel may contain gas, and be resonant ; or it may be felt as a soft band running from above downwards over the tumour.

Solid ovarian tumours.—A solid lump in the belly, arising out of the pelvis and connected with the uterus, is in more than 90 per cent. of cases a uterine fibroid. It may be an ovarian fibroma or sarcoma;

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If there be no ascites, and the patient is elderly, the probability is in favour of a fibroid. Large subserous stalked fibroids are rare in young women, and solid ovarian tumours are often accompanied with ascites. A mistake is unimportant, for the indications for treatment in the two conditions are the same.

Dermoid ovarian cysts, when small, feel like solid tumours, separate from the uterus, but connected with it, movable, without pain, ascites, or cachexia, and not nodular. These characters distinguish it from a malignant tumour.

Fæcal tumours.—Hard fæces in the bowel may form a solid swelling, which may be taken for a fibroid or an ovarian tumour. (1) Fæcal tumours, though apparently solid, present some degree of resonance on percussion ; and (2) they can be indented with the finger. The best aperient to disintegrate a large fæcal mass is sulphate of magnesia, ʒj. every hour.

Fibroids of the anterior abdominal wall. —These tumours are rare ; they are much commoner in women than in men, and in women who have had many children than in those who have not been pregnant. They develop during the years of sexual activity. These tumours are often firmly united to the peritoneum. They are generally single, and are never in the middle line. They are usually smooth, rounded, flattened from before backwards, and for the most part encapsuled. They are not very vascular.

Clinical history.—Fibroids of the abdominal wall cause no symptoms until they are big enough to do so mechanically. They form firm mobile tumours, which, when pinched up, feel as if they had a pedicle. This has led to mistakes, the common error being the taking of these tumours for uterine fibroids. The diagnostic sign is that a tumour of the abdominal wall *becomes fixed when the muscles contract.* This

sign establishes its relation to the belly wall. Its separateness from the viscera can be demonstrated by putting the patient on her knees and elbows, in which position the belly wall is relaxed, and gravity makes the tumour sink downwards, away from the viscera.

Treatment.—The only treatment of a fibroid of the abdominal wall is its removal. If it be found closely united to the peritoneum, the peritoneum should be removed with it.

THE TREATMENT OF SUBPERITONEAL FIBROIDS

THIS depends upon the kind and amount of trouble that the tumours are causing.

1. **Fibroids not causing symptoms.**—The size of the tumour has attracted the patient's attention, but she is not suffering in any way from it. The only effective treatment is surgical treatment. The alternative is letting the tumour alone. Suppose that the patient lets it alone. Her belly will remain big, and it may get a little bigger. It is possible that it may get very big. It is also possible that degeneration of the tumour may set up inflammation, or that it may get incarcerated or adherent in such a way as to interfere with other organs by its pressure. But these things are unlikely. The probability is that an increase of an inch or two in her waist measurement will be all the trouble that her tumour will give her. Suppose that the tumour is removed. The operative mortality is between 8 and 9 per cent. In any case, the patient will have three weeks in bed, and it will be months before she regains the tone of her nervous system. The days following the operation will be very unpleasant ones, marked by vomiting, thirst, pain, and anxiety. After she gets up she will have a scar, which even years afterwards may give way and allow a hernia to protrude. The meno-

pause, with atrophy of the remaining genitalia, will come on. None of these things are desirable. What does she gain by submitting to all this ? - Nothing but a slightly smaller waist, and security against some contingent but improbable dangers. I think a sane woman will prefer to wait as she is.

2. **Fibroids causing symptoms by their size.**—The tumour is so big that it causes discomfort, makes the patient short of breath, unwieldy, unable to take exercise. Removal by operation is the only cure. There are not merely contingent risks, but actual and persistent evils. The risk of life in the removal of a big fibroid, and the possible undesirable after-consequences, are less grave than the constant presence of a great tumour.

3. **Fibroids incarcerated in the pelvis.**—If a fibroid is causing pressure symptoms through being locked under the sacral promontory, the first thing to be done is to push it up. Such tumours can generally be pushed up manually, if the patient is anæsthetised.

4. **Fibroids adherent in the pelvis, or growing into the broad ligament.**—In these operative cure is more difficult, and therefore more dangerous, than in fibroids projecting into the abdominal cavity and freely movable. It is rare for a small fibroid fixed by adhesions, or by its place of growth, to cause danger to life or health, although it may cause some local symptoms. Therefore advise patients with such tumours to let them alone.

Choice of operation.—If operative treatment of subperitoneal fibroids is decided upon, the operator must decide what operation he will do after he has opened the belly and found out the relations of the tumour. One of three operations may be done.

1. **Myomectomy.**—This means taking out the fibroid or fibroids and leaving the uterus. If the

patient is young, this is the ideal operation. This operation can be done when a subperitoneal fibroid is pedunculated, or projects on the peritoneal aspect of the uterus. The details of the operation vary according to the thickness of the pedicle, if present, or the size and situation of the tumour or tumours. The principles of the operation are the following:

(1) If there is a pedicle, the tumour should be detached by cutting off the pedicle, close to the uterus, so that the adjoining peritoneal surfaces can be sewn together.

(2) If there is no pedicle, an incision should be made over the tumour along its equator, till its capsule is reached. Then the tumour can be, with the fingers, shelled out of its capsule. This can generally be done easily.

(3) Sutures are now applied in such a manner as to (a) constrict the bleeding vessels, and (b) bring together the peritoneum bounding the bed of the fibroid. How best to put in these stitches depends upon features special to each case.

(4) If the aims above mentioned cannot be attained, the operation should be completed by amputating the body of the uterus in the manner presently to be described. If the tumour was on one side of the uterus, and hæmorrhage is difficult to stop, you may be able to check it and yet save the uterus, by putting a ligature round the broad ligament and uterine artery on that side only. I have done this with success.

2. **Amputation of the body of the uterus; often spoken of as hysterectomy.**—The abdomen is opened in the same way as in ovariotomy, in the middle line, and over the most prominent part of the tumour. Bring the tumour out of the belly with a " myoma screw." The neck of the uterus now fills the lower end of the wound. The upper part of

the wound will gape, and bowels may protrude. Put in one or two of the stitches with which the abdominal wound will be closed, and hold them temporarily together with artery forceps, or tie them, so as to keep the wound closed while you deal with the tumour.

The next step is to *tie the broad ligaments*. Hold up one ligament, and near the uterus and low down, where the ligament is not traversed by a big vessel, push a closed artery forceps through the ligament. Open the forceps, widely separate the blades, and withdraw it, thus tearing a wide opening. Through this opening pass two ligatures. See that they are not interlocked, and with them tie tightly the broad ligament near the uterus and near the pelvic wall, leaving at least an inch of tissue between them. Divide the broad ligament with scissors midway between the ligatures. Do the same on the opposite side. Tie each round ligament near the inguinal canal, and cut through it on the uterine side of the ligature. Your assistant can now lift the tumour higher up out of the pelvis. Snip through the peritoneum with scissors along a line running horizontally just above the vesico-uterine pouch. Strip it off the uterus below this line by pressing it downwards with a sponge. Then grasp the broad ligament between your finger and thumb, and feel for the pulsation of the uterine artery. Pass a ligature by a blunt needle through the tissues below the artery. Tie it as tightly as you can. Do the same on the opposite side. This ligature of the uterine artery is the cardinal point in the operation.

The main blood supply of the uterus has now been stopped. With a scalpel cut away the bulk of the uterus, leaving a stump about three inches long. The next thing is to trim and suture the stump. Cut away superfluous tissue, leaving a stump formed of an anterior and posterior flap. If a little bit of the corporeal endometrium is left, its owner will still

menstruate. Sew the flaps together by folding one flap over the other, as in the diagram (Fig. 167), in such a way as to have the stump covered with peritoneum. When you have finished this, see that the peritoneum is dry and clean, and that no bleeding is going on. Then close the abdominal incision as after ovariotomy.

You may have to deal with tumours growing out into the pelvic cavity, so as much to narrow the space in which you have to feel for and ligature the uterine arteries, and in that case there will be danger
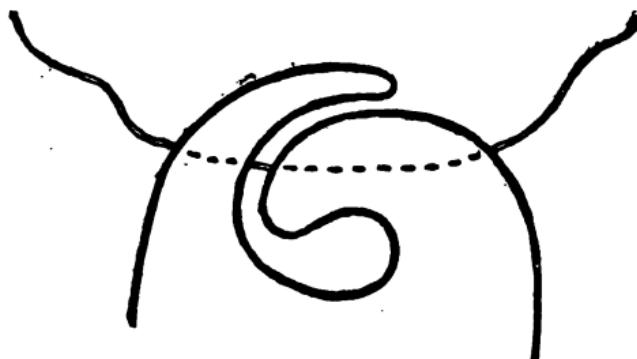
. Fig. 167.—Diagram showing mode of stitching cervical stump.

of including the ureter in the ligature. In such a case the best course, if possible, is first to tie and divide the broad ligaments, and then enucleate the tumour or tumours which fill up the pelvic cavity. When this is done you will have plenty of room to tie the uterine arteries.

3. **Hysterectomy; so-called panhysterec-tomy.**—In the last few years many surgeons have come to think that removal of the whole uterus, cervix as well as body, is better than amputation of the greater part of the body of the uterus. There are some cases—those in which the fibroid grows low down in the cervix, and cases in which there is reason to suspect sarcoma or carcinoma—in which the whole

uterus ought without question to be removed. The chief reason for leaving the cervix and a little bit of the body of the uterus as well as the ovaries or an ovary is that, if this is done, the patient will continue to menstruate. At the present time there is but little difference between the risks of the two operations. The mortality of either operation is between 8 and 9 per cent.*

Methods of operation.—"Panhysterectomy" has been and is performed in different ways by different operators. The result depends upon the celerity and precision of the operator rather than upon the method used. Any method applied by skilful hands gives good results.

The methods employed may be roughly classified as three :

1. From above.
2. From below.
3. The combined method.

1. The abdomen having been opened, and the intestines held away from the field of operation by a large sheet of sterilised Gamgee tissue, the uterus is pulled up. The broad and round ligaments are tied and divided as in amputation of the uterine body. The operator then cuts through the vesico-uterine fold of peritoneum, and with the fingers or a blunt instrument carefully separates the bladder and ureters from the uterus. As in vaginal hysterectomy, so in this operation, the precaution essential for the safety of the urinary organs is to carry this separation far enough on each side. Then the operator feels for the uterine artery on one side, puts a ligature round it with a blunt needle, and ties it. Some operators cut through it and then pick it up with forceps and tie it. Having secured the

* Sänger and Herff, "Encycl. der Geb. und Gyn.," 1900,
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vessels and cut away the cervix from its attachment on one side down to and through the vaginal fornix, some operators go on to divide the vagina all round close to the cervix. When the cervix is free, except on one side, the uterus can be turned over to that side, the incision round the vagina completed, the uterine vessels tied, and finally the uterus completely cut away. There are others who tie and divide the vessels on both sides before they extend the incision into the vagina and cut away the uterus.
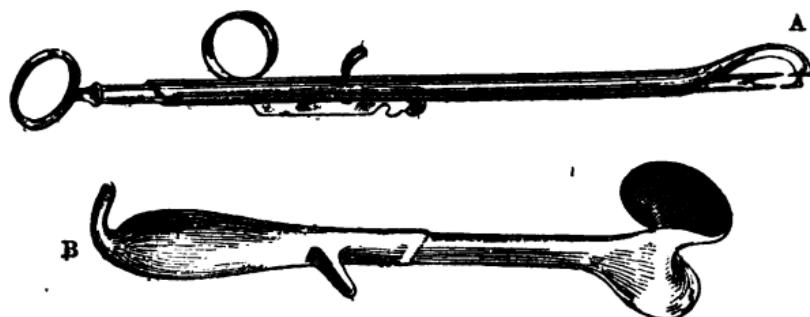
Fig. 168.—A, Doyen's sliding hook clamp; B, Doyen's retractor.

The uterus having been removed, and hæmorrhage arrested, the next thing is to sew up the wound in the peritoneum, uniting the posterior to the anterior piece. This is best done by a continuous suture of fine catgut. Then the abdomen is closed, as after ovariotomy.

2. This method is that of Doyen. The advantage of it is that, by peeling the uterus from below upwards off the bladder and ureters, the risk of injury to those parts is reduced to a minimum. It is essential that the patient should be placed in the Trendelenburg or raised-pelvis position. A long forceps is put in the vagina, with its end in the posterior cul-de-sac. The abdomen is opened, and

the tumour brought outside in the manner already described. An assistant then pushes up as high as possible the forceps in the vagina. With this as a guide the operator opens with scissors the posterior vaginal fornix. This done, the posterior lip of the uterus is seized by a strong volsella (Fig. 168, A).
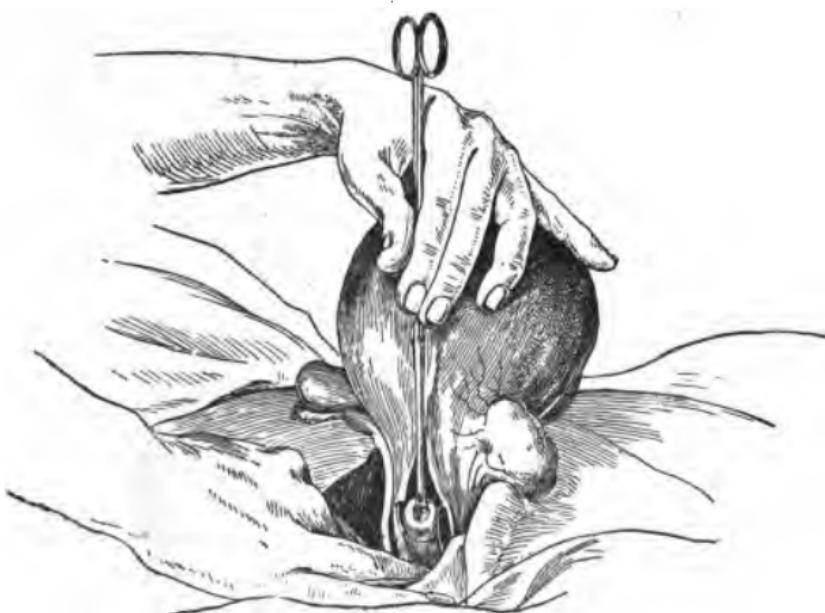
Fig. 169.—Hysterectomy by Doyen's method: separation of bladder begun.

It is then pulled up (Fig. 169), and the operator, guiding his scissors with the left hand, cuts round the lateral attachments of the uterus. As the arteries spout they are clipped with pressure forceps. Then the anterior vaginal fornix is cut through, and the cervix uteri pulled up. As this is done, the loose cellular tissue between the bladder and uterus is torn through with the greatest ease (Fig. 170). The vesico-uterine peritoneum is then cut through. The remaining lateral attachments of the uterus are then

out through, either with or without preliminary liga-
ture, according to the judgment of the operator. The
operator's next business is to tie bleeding-points.
When all bleeding-points have been secured, the

Fig. 170.—Hysterectomy by Doyen's method ; cervix separated
from bladder.

anterior and posterior flaps of peritoneum are sewn
together, the peritoneum made dry and clean, and
the abdomen closed in the same way as after
ovariotomy.

3. The combined method. This means that the
patient is first placed in the lithotomy position. The

cervix is pulled down by a volsella. The anterior
vaginal fornix is opened, and the bladder and ureters
stripped off the cervix, as in vaginal hysterectomy
(care being taken to separate extensively at the
sides), then Douglas's pouch is opened. The uterine
arteries are secured, and the cervix freed from its
lateral attachments, just as in vaginal hysterectomy.
When this has been done, the patient is released from
the lithotomy position and put in the raised-pelvis
position. The abdomen is then opened, and the
operation completed.

The advantage is that the time during which the
peritoneum is exposed to contact and chill is a little
shortened. But the difference is very little. There
is one class of case in which it should be employed,
those in which there is a foul discharge from the
cervix. In such cases, to avoid contamination of the
peritoneum by the discharge, the operation should
be begun by putting the patient in the lithotomy
position, and disinfecting and sewing up the cervix;
and while the patient is thus necessarily in the litho-
tomy position it will be wise for the operator to do
as much as he can before exposing the bowels to
contact and chill.

CHAPTER LIX

ECTOPIC AND COMPLICATED PREGNANCY

Importance of uterine contractions and souffle.—The rhythmical contractions of the uterus and the uterine souffle are absent in extrauterine pregnancy.

History of ectopic pregnancy. — Ectopic pregnancy is in the beginning tubal, or (very rarely) ovarian. Before three months are past, the ovum is too big to remain in the tube. Then either (1) the tube is perforated. It may be perforated (*a*) at a part of its wall that is covered by peritoneum. Then there will be great bleeding into the peritoneal cavity. The fœtus may die, or it may go on developing in the peritoneal cavity. The tube may burst (*b*) at a part where it is in contact with the cellular tissue of the broad ligaments. The fœtus in consequence of such rupture may escape into the cellular tissue and may go on to term, developing underneath the pelvic peritoneum. (2) The fœtus in its membranes may come to protrude out of the open end of the Fallopian tube until it comes to be in the peritoneal cavity. If the membranes get torn the fœtus may come to lie free among the bowels. The placenta as it grows may spread beyond the tube. It has been found implanted on the broad ligament, uterus, bladder, abdominal wall, large intestine, small intestine, mesentery, omentum, stomach. During ectopic pregnancy a decidua is formed in the uterus, and this is at some time expelled with pain and bleeding. The

changes in the tube that I have mentioned, independently of rupture, also cause pain. The pain is severe and paroxysmal.

Hence it is rare for ectopic pregnancy to go to full term without enough symptoms to make the patient think that, if she be pregnant, the pregnancy is not quite natural. Rupture of the tube is attended with well-marked symptoms of internal hæmorrhage.

If the pregnancy has reached its second half, fœtal movements will have been often felt by the patient ; and if she has consulted a doctor, he will have heard the fœtal heart. The breasts will have enlarged.

Spurious labour.—When full term is reached, spurious labour follows. This consists in intermittent pains, like those of labour, due to uterine contraction. The pains recur over a time ranging from a few hours to two or three weeks. They are generally accompanied with hæmorrhage from the vagina. If the decidua has not been cast off earlier in the pregnancy, it is expelled during this spurious labour. Spurious labour is followed by a lochial discharge like that which follows natural delivery, and by activity of the breasts like that which follows the birth of a child. After spurious labour the child always dies, and then, as a rule, the liquor amnii is reabsorbed, and the belly gets smaller.

Diagnosis of subperitoneal pregnancy.— When the fœtus develops underneath the pelvic peritoneum it usually pushes the uterus forwards. The fœtal swelling fills Douglas's pouch, and the os uteri is high up behind the symphysis pubis. The other conditions which may produce physical signs somewhat resembling this are the following :—

(1) *Posterior obliquity of the uterus.*—This means that the uterus has been retroverted, that the posterior wall has remained in its displaced position, the anterior has enlarged to make room for the

fœtus, and the cervix has remained high up in front (Fig. 171). In subperitoneal ectopic pregnancy the body of the uterus lies in front of the cavity which contains the fœtus. You will feel, just underneath the abdominal wall, a solid lump longer

Fig. 171.—Diagram showing posterior obliquity of uterus.
(*After Schaeffer.*)

and a little broader and thicker than the normal uterus. You cannot move it much because it is fixed by the peritoneum, but what little movement you can impart to it is communicated to the cervix, which you feel by the vagina. If the case be one of posterior uterine obliquity you will feel no such body.

(2) *Intrapelvic fibroid.*—The tumour filling the pelvis will be felt to be made up of solid convexities. It is not a fluid swelling with hard knobs movable within it, such as may be felt if an extrauterine fœtus is lying with the feet down, nor has it the uniform hardness of the fœtal head crossed by lines of suture, such as may be felt when an extrauterine fœtus is lying with the head down, separated from the finger only by the thin vaginal wall.

Treatment.—In either of these conditions the treatment while the child lives, before labour has come on, is the same—viz., to let things alone until pregnancy has reached term. If the condition be posterior obliquity of the uterus, the contractions and reaction of the uterus will pull up the posterior uterine wall, and the os uteri will come down into its natural position.

Treatment of extrauterine pregnancy.— (*a*) Dangerous symptoms, either during the second half of extrauterine pregnancy or during spurious labour, are rare. After spurious labour the child will die, and the liquor amnii will be reabsorbed. The woman may then carry the child for years without being the worse for it, except in being larger than she otherwise would be. More often, after the child has died, it remains quiescent for weeks or months, and then suppuration begins. Until then, as a rule, the mother's health does not suffer in any important way. (*b*) But by operating while the child is alive, a living child may be delivered. The mortality of operations for the delivery of living extrauterine children is very high—between 60 and 90 per cent. In some cases the placenta has been found so limited in its implantation on the broad ligament that it has been possible to pull it up, ligature the vessels supplying it, and cut it away. But in most it has not been possible to do this, and the operator, if he elected to

remove the placenta, had to peel it off and trust to hæmostasis by pressure forceps, cautery, styptics, or plugging ; and in pregnancy with a living child hæmorrhage has often proved uncontrollable. The prospect of a living child is not bright. Because the operation is performed while the child is alive, it does not follow that the child will be born alive ; three-fifths of them are not. Extrauterine children are more often deformed than intrauterine. In between one-fourth and one-fifth of them there is deformity. Hence by operating while the child is alive you subject the mother to a terrible risk for an uncertain gain.

After the child has been dead some time the placenta becomes thrombosed. The danger of hæmorrhage during operation is then comparatively trifling. Unfortunately we know not how soon thrombosis takes place. The safest course is to wait for the first symptoms of suppuration, and then operate.

Diagnosis long after death of child.— An ectopic pregnancy in which the child has been long dead, its liquor amnii absorbed, and no history can be obtained, cannot be distinguished from solid tumours of other kinds. If the fœtus has developed underneath the pelvic peritoneum, that membrane will hold it close to the uterus, so that it will form a retrouterine solid tumour, apparently one with the uterus, and therefore indistinguishable from a fibroid. If it be free in the peritoneal cavity, and movable apart from the uterus, it will be indistinguishable from a solid tumour of the ovary. The correct diagnosis could in neither case be made without an exploratory incision ; and if the patient's health be suffering, this will be the proper treatment.

The treatment of extrauterine gestation after the death of the child.—It is possible for a patient to retain a dead ectopic child for years without her health suffering. The child may remain prac-

tically unchanged, or calcareous salts may be deposited in its membranes and its skin, so that it becomes enclosed in a more or less complete calcareous shell. and becomes what is called ·a lithopædion. In either case the patient may go for an indefinite time in good health, suffering only from the increased size of the belly. So long as she is in this state there is no need to do anything. A moderate increase in the waist measurement is not a sufficient reason for an operation involving some risk to life and possible ulterior ill-effects.

When operation is indicated.—Usually, at a variable time after the death of the child, suppuration begins. This is marked by fever, pain, and, if these symptoms continue, wasting. As soon as this process has begun it is time to interfere. Wait only long enough to be sure that the febrile symptoms are not due to some other cause. The operative removal of an extrauterine fœtus at this stage is not usually difficult or dangerous. But there are points yet to be settled by clinical experience.

The operation for removal of a dead extrauterine fœtus.—Make your incision at first small. When you have found out the state of things present, you can enlarge it as you think best. If the child be in the peritoneal cavity, you will come upon it at once. Judge from the size of the child how large an incision is needed for its delivery, and enlarge the wound in the abdominal wall to the required extent. Seize the child by the leg, and extract it. Cut through the umbilical cord.

So far the operation is simple. That upon which judgment is difficult is how to deal with the placenta. There are three courses :

1. To remove it.
2. To leave it to be absorbed.
3. To leave it to be discharged.

1. The general rule has been not to try to remove the placenta. (*a*) Ascertain the size and condition of the placenta. If you feel it as a definite, firm, circumscribed lump, it is thrombosed, and may be peeled off with the fingers with only trifling hæmorrhage. If the placenta is not thrombosed, it will not feel firm, and detachment of part of it will be followed by formidable bleeding. If so, desist, and pack the part that bleeds and its neighbourhood with iodoform gauze. (*b*) If you find the placenta is thin, spread out over a large area, and without a distinctly felt edge, you had better not try to detach it.

2. If you attempt not removal of the placenta, the question arises, Shall it be left to be absorbed ? It is not safe to expect absorption of the placenta.

3. When in doubt, leave the placenta. Close the abdominal wound, except the lower two inches. Here put two pieces, side by side, of large-sized india-rubber drainage tubing. Wash out the cavity twice daily, or oftener if the discharge be offensive, with a non-poisonous antiseptic douche, using plenty of it. If iodoform gauze has been used, bring out the end through the opening. Leave the gauze in for a week ; and after removing it, wash out the cavity as advised above. In most cases the placenta will come away, as shreddy, fibrous stuff, within a fortnight.

Vaginal operation.—If, when the abdomen has been opened, you have found that the fœtus is underneath the pelvic peritoneum, it will be better, if possible, to remove it through the vagina. Examine carefully by the vagina. If you can feel the fœtal head low down in the pelvis behind the uterus, or if you can feel fœtal limbs in this situation, so that the long axis of the swelling is parallel with that of the uterus, and the tissues which separate the fœtal parts from the vaginal finger are thin, the best operation is to incise the vagina, and

thus extract the fœtus. The thinness of the tissues enables you to be sure that you will not cut through the placenta. Make a cut in the middle line, and then extract the fœtus, either by making a hole in the head with scissors, and then seizing the edge of the opening with forceps, or by grasping a foot, according to the part that presents. Make no attempt to remove the placenta. Wash out the cavity twice daily, or oftener, with a non-poisonous antiseptic until all the placenta has come away.

If the child is lying transversely; if there is any doubt about the diagnosis; if through the vagina you can only feel a solid lump, this is probably the placenta, and you had better open the gestation sac abdominally, extract the fœtus, and then, if the placenta be thrombosed, peel it off and remove it : if not, pull it up, and transfix and tie with as many interlocking ligatures as may be necessary the broad ligament below it.

CHAPTER LX

INGUINAL SWELLINGS

CERTAIN inguinal swellings are peculiar to women.

Hydrocele of the canal of Nuck.—This is rare. It is congenital. Such a sac contains serous fluid, but sometimes blood, a result of injury. In many cases the cavity is multilocular.

Symptoms and signs.—This condition exists from birth, but may first attract notice at any age. It occurs on the right side as often as on the left: less often on both sides. The tumour is painless (unless inflamed), ovoid, its long axis running parallel with Poupart's ligament, and pointing towards the labium: soft, not tense; if it communicate with the peritoneum it disappears when the patient lies down.

These tumours are often taken for hernia. Translucency, the well-known sign of hydrocele, is only to be obtained if the communication with the peritoneal cavity is closed. A hydrocele does not gurgle.

As a result of inflammation, gas may develop, and thus such a hydrocele may be resonant. As a rule a hydrocele is dull on percussion. It fluctuates.

Treatment.—The treatment consists, if there be a communication with the peritoneal cavity, in the application of a truss. If it do not communicate, then the best treatment is a free incision, and excision of so much of the wall as seems superfluous.

Hernia of the ovary.—An inguinal swelling

in a woman may be a hernia of the ovary. Such herniæ are usually congenital. Of inguinal herniæ in general, about one in seven is congenital, while of those containing ovaries two-thirds are congenital. When congenital, the condition is nearly always bilateral. Of ovarian herniæ on the right side about 5 per cent. are irreducible; of those on the left side about twice as many.

Symptoms.—Hernial ovaries often give no trouble. In congenital herniæ symptoms may begin at puberty. There may be pain, radiating from the hernia, increased by lying on the opposite side, increased also by bimanually pressing the uterus away from the hernia, so that the ovarian ligament is dragged on.

The hernial sac may contain the ovary and nothing else, or it may contain also bowel or omentum, or both. The ovary may be adherent to bowel or omentum; in which case, if the hernia be an acquired one, it is reasonable to think that the adhesion has pulled the ovary down into the hernia. Generally the uterus is pulled into an oblique position in the pelvis, and in rare cases one corner of the uterus has been contained in the hernia.

Diagnosis.—An ovarian hernia differs from one containing bowel in being more solid and firm, and not gurgling. It differs from an enlargement of inguinal glands in having a neck passing up the inguinal canal; it may be possible to demonstrate that this neck is connected with the uterus.

Treatment.—Either keep the hernia back by a truss, or advise the patient to have the inguinal canal closed by operation.

Hernia of the Fallopian tube.—The Fallopian tube may be in a hernial sac along with the ovary. Very rarely the Fallopian tube without the ovary is contained in a hernial sac.

Tumours of the round ligament.—These may be situated in one of two places :—(1) Within the belly ; (2) outside the belly wall. Most such tumours are outside the external ring, and therefore I describe them under the heading of inguinal tumours. The tumours that have been seen in the round ligament are either fibroids or fibroid mixed with other tissue. These tumours, like inguinal hernia, are more common on the right side than the left. They grow slowly. They increase in size during pregnancy, and retrograde after delivery. They cause no symptoms except sometimes pain. Fibroids of the round ligament form firm rounded or ovoid solid lumps.

In case of doubt as to the nature of an inguinal swelling which is giving trouble, the proper course is to make an incision over it, and thus ascertain its nature. The only way to treat a fibroid of the round ligament is to remove it. One who undertakes the operation must be prepared to deal with the epigastric artery.

Tumours of the round ligament within the abdomen.—These are less common than those occurring in the groin. You have a solid lump tethered at one end to the uterus, and at the other to the inguinal ring.

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